B & Z LIBRARY

Synopsis of the North American Odontiinae, with Descriptions of New Genera and Species (Lepidoptera: Pyralidae)

by

EUGENE MUNROE

Entomology Research Institute, Research Branch
Canada Department of Agriculture, Ottawa

THE CANADIAN ENTOMOLOGIST

Supplement 24

1961

OHIO STATE UNIVERSITY
JAN 3 - 1962
LIBRARY

Synopsis of the North American Odontiinae, with Descriptions of New Genera and Species (Lepidoptera: Pyralidae)

by

EUGENE MUNROE
Entomology Research Institute, Research Branch
Canada Department of Agriculture, Ottawa

THE CANADIAN ENTOMOLOGIST
Supplement 24
1961

CONTENTS

PAGE

Introduction 5
Key to Genera 6
Dichogamini 7
Metrea Grote 7
Dichogama Lederer 7
Alatuncusia Amsel 10
Odontiini 12
Microtheoris Meyrick 12
Rhodocantha, new genus 15
Frechinia, new genus 16
Procymbopteryx, new genus 20
Cymbopteryx, new genus 22
Edia Dyar 23
Dichozoma, new genus 25
Cuneifrons, new genus 26
Gyros, Henry Edwards 27
Anatralata, new genus 30
Metaxmeste Hübner 31
Pogonogenys, new genus 32
Chrismania Barnes and McDunnough 35
Plumipalpia, new genus 36
Nannobotys, new genus 36
Porphyrorhegma, new genus 37
Psammobotys, new genus 39
Mimoschinia Warren 40
Jativa, new genus 42
Pseudoschinia, new genus 43
Noctueliopsis, new genus 44
Mojavia, new genus 50
Eustixia Hübner 50
Heliothelopsis, new genus 52
Chlorobapta Barnes and McDunnough 53
Summary and Check List 54
Acknowledgments 56
References 57
Index 92

Synopsis of the North American Odontiinae, with Descriptions of New Genera and Species (Lepidoptera: Pyralidae)

By EUGENE MUNROE
Entomology Research Institute, Research Branch
Canada Department of Agriculture, Ottawa

The group Odontiinae was named as early as 1854 by Guenée, who proposed the name Odontidae for a group of two genera. Guenée, however, did not begin to appreciate the natural limits of the group, nor did any subsequent author until Müller-Rutz (1929). Müller-Rutz correctly grouped the European genera, but did not apply a name to the assemblage. Marion (1952) considered the group as a sub-tribe of his tribe Evergestini. Marion used the name Titanii for the group, but the name Odontiinae is also current (Munroe, 1956, 1958), and there seems to be no reason why it should not prevail. I attach more weight to the difference between the Evergestini and Odontiinae than did Marion, and I rank the latter group as a subfamily, close to the Glaphyriinae and the Scopariinae. The group is always recognizable by the structure of the male genitalia. External characters are variable, and genera have been variously placed in Pyraustinae, Nymphulinae, Schoenobiinae, Galleriinae, Pyralinae and Endotrichinae. The following characters appear to be general and significant: Maxillary palpus present; chaetosema absent; cubitus of hind wing without pecten; tympanic flap present but simple or with a weak transverse lobe; gnathos present; uncus almost always bilobed, usually with basally directed lateral setae; valve usually radially fluted; juxta and eighth sternite modified to form a complex structure.

The subfamily occurs in all continents; it is particularly well developed in warm-temperate eremic regions of the Northern Hemisphere. In addition to the Nearctic forms considered in the present paper, the subfamily includes at least the following nominal genera not represented in our fauna: *Aeglotis* Amsel, *Aeschremon* Lederer, *Anthophilodes* Guenée, *Anthophilopsis* Ragonot, *Aporodes* Guenée, *Atralata* Sylvén, *Basonga* Möschler, *Blepharucha* Warren, *Boeotarcha* Meyrick, *Canuza* Walker, *Carbaca* Walker, *Cataonia* Ragonot, *Catharia* Lederer, *Cliniodes* Guenée, *Clupeosoma* Snellen, *Cynaeda* Hübner, *Dausara* Walker, *Deanolis* Snellen, *Emprepes* Lederer, *Endolophia* Hampson, *Epacestria* Hübner, *Ephelis* Lederer, *Epinoorda* Rebel, *Ertrica* Walker, *Eteta* Walker, *Euctenospila* Warren, *Eurrhypis* Hübner, *Exarcha* Lederer, *Hammocallos* Chrétien, *Hemiscopis* Warren, *Heortia* Lederer, *Hercyna* Treitschke, *Hercynella* Bethune-Baker, *Hydrorybina* Hampson, *Idessa* Walker, *Kerbela* Amsel, *Mabilleodes* Marion and Viette, *Neogenesis* Hampson, *Noctuelia* Guenée, *Noctuelita* Strand, *Noctuomorpha* Guenée, *Noorda* Walker, *Noordodes* Hampson, *Odontia* Duponchel, *Pelaea* Lederer, *Pitama* Moore, *Protrigonia* Hampson, *Syntonarcha* Meyrick, *Taurometopa* Meyrick, *Tegostoma* Zeller, *Thesaurica* Turner, *Threnodes* Duponchel, *Titanio* Hübner, *Turania* Ragonot, *Tyspana* Moore, and *Usgentia* Amsel.

The North American species have been widely scrattered throughout the list of Pyraustinae, and have not previously been assembled in a coherent group.

An account of the general classification of the subfamily will be reserved for a later work. The Nearctic forms fall into two groups: one mainly Neotropical, represented in our fauna by three genera, and the other, most strongly developed in the drier parts of the Holarctic Region, including nineteen Nearctic genera. These two groups are recognized as tribes, but for convenience their genera are included in a single key.

Key to Genera

1. Labial palpus strongly upturned in front of face 2
   Labial palpus at most obliquely upturned 3
2. Labial palpus smoothly and conically scaled to the acute apex ..... *Dichogama*
   Labial palpus with the scaling of each joint distally truncate, the three joints obviously demarcated ..... *Alatuncusia*
3. Labial palpus minute; proboscis obsolete; M_2 of hind wing arising well above M_3, parallel to it ..... *Chlorobapta*
   Labial palpus normally developed 4
4. Frons rounded, not prominent 5
   Frons flat and oblique or prominent 7
5. Labial palpus bushy ..... *Metaxmeste*
   Labial palpus smoothly scaled 6
6. Third joint of labial palpus long, obliquely upturned in line with second —*Heliothelopsis*
   Third joint of labial palpus short, drooping ..... *Metrea*
7. Frons with a pointed or wedge-shaped prominence or with two or three pointed prominences 8
   Frons oblique or with a rounded or domed prominence 12
8. Frons conically prominent ..... *Eustixia*
   Frons vertically wedge-shaped or with two or three pointed prominences 9
9. Frons vertically wedge-shaped ..... *Gyros*
   Frons transversely wedge-shaped or truncated, the ventro-lateral angles produced as sharp tubercles 10
10. Frons rounded above, truncated anteriorly ..... *Chrismania*
    Frons transversely wedge-shaped anteriorly 11
11. Frons with a median tubercle above the apex of the wedge in addition to the paired tubercles at its angles ..... *Dichozoma*
    Frons with no median tubercle above apex of wedge, the wedge with a shallow median groove dorsally, ending in a weak distal emargination ..... *Cuneifrons*
12. Hind wing with M_2 and M_3 lacking; labial palpus porrect, plumose ..... *Plumipalpia*
    Hind wing with M_3 present 13
13. Hind wing with M_2 lacking ..... *Nannobotys*
    Hind wing with all veins present 14
14. Labial palpus with long, bushy scaling anteroventrally 15
    Labial palpus normally scaled 16
15. Eye reduced, gena broad and scaled ..... *Pogonogenys*
    Eye of moderate size, gena naked ..... *Psammobotys*
16. Eye strongly reduced, surrounded by an unscaled zone 17
    Eye of normal size 18
17. R_2 from well before end of cell; forewing narrow and stubby ..... *Porphyrorbegma*
    R_2 from just before end of cell; forewing broad and rounded ..... *Anatralata*
18. R_2 basally approximated to, or rarely stalked with R_{3+4} 19
    R_2 not basally approximated to or stalked with R_{3+4} 22
19. R_3 and R_4 very short-stalked, R_2 very weakly approximated to R_{3+4} ..... *Pseudoschinia*
    R_3 and R_4 long-stalked, R_2 distinctly approximated to R_{3+4} 20
20. Maxillary palpus filiform, costa slightly excavated ..... *Mojavia*
    Maxillary palpus ending in an expanded tuft of scales; costa convex 21
21. Forewing with apex sharp, tornus rounded; hind wing with Sc and R_1 strongly anastomosed; proboscis weak or aborted ..... *Frechinia*
    Forewing with apex rounded, tornal angle distinct; hind wing with Sc and R_1 weakly anastomosed; proboscis normal ..... *Noctueliopsis*
22. Forewing with R_5 basally approximated to M_1, well separated from R_{3+4}, in the male the space occupied by a fovea 23
    Forewing with R_5 not basally approximated to M_1; male without a fovea between R_{3+4} and R_5 24
23. Valve of male genitalia with a prominent costal process ..... *Procymbopteryx*
    Valve of male genitalia with no costal process ..... *Cymbopteryx*
24. Frons flat and oblique 25
    Frons prominent and rounded 26
25. Forewing with discocellular short, straight and erect; proboscis vestigial ..... *Microtheoris*
    Forewing with discocellular curved and oblique, proboscis slender but well developed ..... *Rhodocantha*

26. Forewing fairly narrow, with well-defined tornal angle, and with at most diffuse and inconspicuous scale-tufts on inner margin 27
Forewing broad, with rounded tornus, and with two prominent scale-tufts on inner margin ..... *Edia*
27. Stalk of R_{3+4} about as long as free parts of those veins ..... *Jativa*
Stalk of R_{3+4} much longer than free parts of those veins ..... *Mimoschinia*

Tribe Dichogamini

Type genus: *Dichogama* Lederer

Labial palpus upturned; male gnathos short and triangular and arising from a transverse band; valve long and triangular, distally ornamented or divided. I see no warrant for separating *Alatuncusia* in a tribe of its own, as proposed by Amsel, and I accordingly sink his tribe Alatuncusiini.

Metrea Grote

Type species: *Metrea ostreonalis* Grote, by monotypy.

Metrea Grote, 1882: 73.

Frons rounded or slightly flattened, not prominent; labial palpus obliquely upturned, the third joint short and decumbent, concealed in the scales of the second; maxillary palpus prominent, filiform; eye large; antenna filiform, rather thick; proboscis prominent; ocellus normally developed; body and legs robust; praecinctorium with a simple, transverse lobe; male with prominent anal tuft. Forewing rounded; R_1 from well before apex of cell, R_2 from a little before apex, approximated to R_{3+4} somewhat beyond base; R_3 and R_4 long-stalked; R_5 from just behind anterior angle of cell, curved and weakly approximated to R_{3+4}; M_1 straight, from a little behind R_5; discocellular moderately curved; M_2 and M_3 arising a short distance apart at posterior angle of cell, basally weakly approximated; Cu_1 considerably removed from M_3, but deflected slightly towards it basally; Cu_2 from cell at four-fifths; 2nd A ending at tornus; 3rd A well defined, running to posterior margin. Hind wing rounded; Sc anastomosed with R_s; R_s stalked for a reasonable distance with M_1; discocellular erect in anterior half, then abruptly angled and strongly oblique in posterior half; M_2 to Cu_1 arising close together at posterior angle of cell, basally somewhat approximated; Cu_2 from cell at three-fourths; three anals present.

Male Genitalia. Uncus blunt and rounded, laterally decurved and setose; gnathos bridge-like, with a short, subtriangular, blunt-tipped central part; tegumen fairly broad; vinculum narrow, centrally carinate; juxta bipartite, fan-like; valve broad, rounded, radially fluted, with a marginal fringe of long, basally directed setae; penis curved and rather stout, of nearly even width.

Female Genitalia. Ovipositor slender and deep, lobe narrow, densely setose; posterior apophysis slender, anterior apophysis broadened rhomboidally near base; ductus bursae short, with a sclerotized collar near bursa; bursa large, globular, membranous, finely denticulate, more densely on one side, with a large, crumpled sclerotization at opening of ductus.

This genus is very closely related to the Neotropical *Cliniodes* Guenée, but differs in the more elongate, obviously decumbent, third joint of the labial palpus, and in the distally rounded, not truncated, valve of the male genitalia. Only one species is known. The various exotic species placed in *Metrea* by Hampson are all Pyraustinae, belonging to a wide range of genera.

Metrea ostreonalis Grote

Figs. 1, 70-72, 170, 212.

Metrea ostreonalis Grote, 1882: 73.
Botys urticaloides Fyles, 1894: 186.

Head blackish fuscous, labial palpus slightly paler at base beneath; thorax

above blackish fuscous, tegula and distal part of patagium white; abdomen above blackish fuscous, some white scaling distally on each segment, most prominent on second; top of abdomen white, male with a prominent anal tuft; thorax beneath white; legs white, front femur and tibia dark grey on anterior surface; abdomen white with dark-grey underscaling. Forewing above slightly creamy white with a bluish lustre on disc; a greyish-fuscous discocellular bar surrounded by a diffuse greyish-fuscous ring; a crenulated greyish-fuscous postmedial line, broadly excurved around cell, then inwardly oblique to posterior margin at two-thirds, immediately preceded by a greyish-fuscous patch from Cu_1 to posterior margin, and followed after a space by a greyish-fuscous band from cell M_1 to just before posterior margin. Hind wing above immaculate white. Forewing beneath white, discocellular bar and ring and postmedial line as above, but fainter and with no fuscous patches before or after postmedial line. Hind wing beneath immaculate white. Expanse 33 to 37 mm.

Male and Female Genitalia. As described for the genus.

Types. Of *ostreonalis*, Amherst, Mass., in British Museum (Natural History), London; of *urticaloides*, Brome Co., P.Q., in United States National Museum.

Range. Ontario and Quebec to Connecticut, Pennsylvania and Michigan.

Material Examined. About 20 specimens from the following localities: Quebec: Wright, Kazubazua; Norway Bay; Gracefield; Knowlton; Lac Mondor, near Ste. Flore; Ontario: Ottawa; Long I., Rideau R.; Merivale; Massachusetts: Amherst; Michigan: Washtenaw Co.

Life History. A description of the colour and habits of the larva has been published by McDunnough (1931). The larva lives in an untidy web of leaves on *Rhamnus frangula* Linn. The head and prothoracic shield are grey-blue, sprinkled and dotted with black; the abdomen is dorsally grey-blue with a geminate orange dorsal line and a single orange spiracular stripe; the tubercles are large, black, ventrally paler grey-blue. The larva overwinters in a coarse yellowish cocoon mixed with debris and leaves, and passes the winter in this, pupating in the spring. Dr. T. N. Freeman informs me that he has reared the species from *Dirca palustris* Linn.

Dichogama Lederer

Type species: *Dichogama redtenbacheri* Lederer, by monotypy.

Dichogama Lederer, 1863: 396.

Labial palpus upturned, obliquely flattened, densely and smoothly scaled, joints hardly distinguishable, the third short and pointed; maxillary palpus short and flattened; tongue stout and prominent; frons flat; eye large; ocellus small; antenna filiform, scaled above, evenly pilose below. Body moderately thick, abdomen of male long and with a prominent anal tuft. Forewing rather narrow; R_1 from well back on cell; R_2 and R_{3+4} close together; R_5 not approximated to R_{3+4}; M_1 from near upper angle of cell; discocellular curved, the lower limb considerably produced; M_2 and M_3 arising close together, Cu_1 more widely, and Cu_2 still more widely, spaced. A tuft of raised scales on anal area. Hind wing with R_s anastomosed with Sc for a short distance only, M_1 not stalked with R_s; anterior part of discocellular erect, posterior part very oblique; M_2 and M_3 approximated at base for a considerable distance, Cu_1 approximated to M_3 for a very short distance, all arising close together near angle of cell, Cu_2 arising from cell at about five-sixths of the way from base to end of cell.

In addition to the species discussed here there are a number in the West Indies, some of which may eventually be discovered in Florida.

Key to the North American Species

1. Forewing with a small dull-red patch on outer margin just behind apex; no distinct antemedial band, postmedial band or discocellular marking ..... *amabilis* Möschler
   Forewing with no dull-red patch; transverse bands and discocellular marking usually indicated, often conspicuous ..... *redtenbacheri* Lederer

Dichogama redtenbacheri Lederer

Figs. 2-4, 73-75, 171, 213.

Dichogama redtenbacheri Lederer, 1863: 396, Pl. 13, Figs. 10, 11.

Head, body and legs whitish buff, tarsal segments with distal fuscous bands. Forewing above nacreous white with variably developed pattern; black streaks in basal area on anal fold and on 3rd A; antemedial line almost transverse from costa to base of Cu_2, then looped to an indentation on 2nd A, then looped again to posterior margin; a black bar on discocellular surrounded by a large, somewhat reniform annulus; veins between annulus and postmedial line diffusely black-streaked; postmedial line oblique outward to cell M_1, then curved and inwardly oblique and slightly incurved to posterior margin; terminal area weakly infuscated and with purplish lustre; a fuscous streak on intervenular fold in cells M_1 and M_2 and a black subterminal dot on each of these two streaks; fringe fuscous, darkest opposite cells M_1 and M_2. Hind wing above translucent white with purplish iridescence, narrowly infuscated at apex; fringe white. Forewing beneath light buff, markings of upper side very faintly indicated; a heavy, fuscous, arcuate band from R_2 to M_3 in the position of the postmedial line, but more strongly curved than the corresponding section on the upper side. Hind wing beneath as above. Expanse 26 to 27 mm.

Male Genitalia. Tegumen dorsally domed, then upturned, the lateral arms long and slender; uncus deeply bifurcate, with paired dorsal setal tufts at base, each lobe ending in a small, decurved hook; gnathos with long, straight lateral arms, abruptly angled to the decurved, strap-like middle part; juxta U-shaped, articulated to vinculum by Y-shaped sclerites; valve broad, weakly sclerotized, fluted near apex, with an oblique fold above sacculus and specialized setae on ventral margin; penis short, boot-shaped, with a complicated array of cornuti.

Female Genitalia. Ovipositor fleshy, densely pilose, with an array of long setae around margins; posterior apophysis short, weak; anterior apophysis longer, slender, tergite with a row of setae on posterior margin; ductus bursae short; bursa irregularly sclerotized, convoluted and spined, and densely fluted on one side.

Types. One male and one female syntypes, supposedly in Vienna Museum, but not seen by me there.

Range. Southern Florida; Antilles; Central and South America.

Material Examined. Twenty-four specimens, Tavernier, Monroe Co., Fla.

Life History. Unknown.

Remarks. There is considerable variation in the intensity of the maculation; some specimens have the basal and discocellular areas broadly suffused with black, others have the markings obsolescent. Weakly marked specimens can be told from *D. amabilis* by the absence of the reddish subapical spot that is characteristic of that species.

Dichogama amabilis Möschler

Figs. 5, 6, 172, 214.

Dichogama amabilis Möschler, 1891: 296.

Dichogama amabilis, Dyar, 1901: 20.

Head and thorax above white; abdomen above whitish buff or white; body beneath and legs white or weakly buff-tinted, tarsal segments with distal fuscous

bands. Forewing above silvery white, slightly infuscated distally, some specimens with sparse fuscous dusting, especially around cell; faint black subterminal dots on interspaces; a small subapical red spot in cell R_4; fringe grey. Hind wing pure translucent white, sometimes with one or two black terminal dots before apex. Under side white, immaculate. Expanse 28 to 35 mm.

Male Genitalia. Tegumen dorsally slightly domed, lateral arms long and slender; uncus upturned, roof-shaped, sinuate, with long dorsal and shorter ventral vestiture of setae near apex, apex not divided, but bearing a pair of small hooks; vinculum small; juxta complex, divided; valve mitten-shaped, distally emarginated anterior to the sacculus, apically fluted, the sacculus densely setose; penis with a pair of flat cornuti, each bearing a comb of spines; eighth tergite and sternite greatly modified.

Female Genitalia. Ovipositor densely pilose, a row of longer setae around margin; posterior apophysis short and weak; anterior apophysis longer, slender, tergite with an irregular row of setae near posterior margin; ductus bursae short, a pair of shallow, sclerotized caeca near ostium; bursal end of ductus heavily sclerotized, contorted, densely spinulose; bursa heavily fluted, bearing an unsymmetrical pair of spinulose signa.

Type. Lectotype, female, Puerto Rico, in Berlin Museum.

Range. Antilles and southern Florida.

Material Examined. Two males, two females, Tavernier, Monroe Co., Fla.

Life History. Larva described by Dyar, on *Capparis jamaicensis*, living between leaves firmly spun together. Dyar's description is as follows:

"Head rounded, broad, the apex under joint 2; clypeus high, the paraclypeal pieces reaching vertex; antennae rather long; whitish with large angular olivaceous blotchy mottlings and tiny black dots, the tubercles black ringed; sutures of clypeus black; two upper ocelli with large black central pigment spots; setae long, fine white; width 3-4 mm. Body thick, a little flattened, narrowing somewhat posteriorly; cervical shield large, weak, translucent whitish, more translucent centrally and anteriorly, the whitish parts black dotted and a marginal black line. Body whitish, the food giving a green tint. A double yellow dorsal line enclosing the greenish dorsal vessel; a single substigmatal line on joints 3 to 13 anteriorly, wavy edged and a little broken; sides a little whitened, with a broken white lateral line above tubercle iii, obscurely dusky edged above. Tubercles i to iii white, hair tubercles black with a distant white ring, absent on iii which therefore looks smaller; iv + v obscurely white ringed and vi also on the apodal segments. Anal flap greenish marbled with white. Spiracles light red, that of joint 5 lower than the rest. Feet short, pale."

Alatuncusia Amsel

Type-species: *Lygropia gilvicostalis* Hampson, by monotypy.

Alatuncusia Amsel, 1956: 280.

Frons flat and oblique; labial palpus upturned, slender, the joints distinct, second joint long, third joint fairly short, cylindrical; maxillary palpus squamous but not dilated; proboscis stout and prominent; eye large; ocellus rather small; antenna thick and somewhat compressed; body stout; legs robust; praecinctorium transversely flattened. Forewing slender, costa straight, inner margin weakly lobed near base, outer margin moderately curved; cell narrow, radius far removed from costa; R_1 from cell at three-fifths; R_2 from cell somewhat before apex, curved and approximated to R_{3+4} somewhat beyond base; R_{3+4} from anterior angle of cell, stalk about equal in length to free parts of R_3 and R_4; R_5 from anterior angle of cell, slightly curved but not approximated to R_{3+4}; M_1 from

just behind anterior angle of cell, straight; discocellular moderately curved; M_2 and M_3 slightly separated, from posterior angle of cell; Cu_1 from somewhat basad of angle; Cu_2 from cell at three-fourths; 2nd A strong and straight, running to outer margin; 3rd A not distinct. Hind wing of normal shape; Sc and R_s briefly anastomosed; R_s and M_1 stalked for a short distance; discocellular strongly bent in middle, posterior part oblique, nearly transverse at angle; M_2 and M_3 very closely approximated at base or weakly stalked; Cu_1 from angle of cell; Cu_2 from cell at five-sixths; three anals present.

Male Genitalia. Uncus slender, dilated terminally into a pair of broad triangular flaps; gnathos weakly sclerotized, a slender, strap-like central portion arising from a transverse element; tegumen slender, with long, narrow side-pieces; vinculum moderate; juxta bilobed, with specialized, scale-like structure; valve slender, rounded distally, bearing a slender, stylus-like process from costa, and a zone of basally directed hairs on distal and ventro-distal margins; vinculum bearing a long, broad, valve-like pair of dorsally directed processes; penis short, cylindrical, armed with one large cornutus and a row of numerous smaller ones.

Female Genitalia. Ovipositor normal, densely setose; posterior apophysis slender, not very long; anterior apophysis longer, with a low, triangular, dorsal flange; ductus bursae membranous for some distance from ostium, then with a sclerotized strip of moderate length, followed by a heavily pleated and sclerotized zone, leading into the bursa; bursa basally contorted and heavily pleated and sclerotized, the sclerotization continued down each side, on each side with an indented signum bearing a group of prominent spines; a prominent, twisted, fluted and partly sclerotized, posterolateral diverticulum; fundus membranous, finely denticulated, bearing a diffuse, scobinated signum.

A small genus, widely distributed in the Neotropical region. The precise relationships of the species require further study.

Alatuncusia bergi (Möschler), new combination

Figs. 7, 8, 76-78, 173, 215.

Dichogama bergi Möschler, 1891: 297.

Head above greyish buff; labial palpus greyish buff dorsally, whitish buff ventrally; body dorsally grey, with some buff tints on posterior margins of abdominal terga; thorax beneath and legs white, outer surfaces of fore leg and of middle and hind tarsi grey; abdomen beneath greyish buff, scaled with white terminally and laterally. Forewing above dull grey, costal two-thirds relieved to a varying extent with pale greyish buff; markings obscure; antemedial line obsolete on costal half of wing, posteriorly light grey, followed by dark grey, oblique distad for a short distance behind cell, then right-angled and oblique basad to 2nd A, then again right-angled and oblique distad to inner margin; an obscure dark discocellular dot; postmedial pale, preceded by dark grey, erect for a short distance from costa, then broadly excurved well beyond end of cell, and retracted behind cell in a sharp point on Cu_2, again excurved and more weakly retracted on 2nd A, then erect to inner margin; subterminal area sometimes with dark intervenular dashes; a fuscous terminal line; fringe grey. Hind wing above translucent white, veins somewhat yellowish, outer margin narrowly stained with yellowish fuscous; fringe yellowish fuscous basally, white distally. Forewing beneath grey; costa, terminal area and a streak in cell faintly yellowish buff. Hind wing beneath as above. Expanse 19 to 21 mm.

Genitalia. As described for the genus.

Type. Holotype, female, Puerto Rico, in Berlin Museum.

Range. Greater Antilles; ? South America; southern Florida.

Material Examined. Twenty-two specimens, Tavernier, Monroe Co., Fla.

Life History. Larva described by Dyar (1901), on *Capparis cynophallophora*, living among leaves firmly spun together. Dyar's description is as follows:

"Head round, apex below joint two, clypeus high, reaching cervical shield in the ordinary position of retraction, whitish with scattered patches of dark brown; width 1-7 mm. Body pale red, scarcely marked, cervical shield transparent, faintly spotted; subdorsal (above i), lateral (between ii and iii) and stigmatal lines distinct, whitish, reaching joints 3 to 13; dorsal vessel reddish; spaces between dorsal and lateral lines and between lateral and stigmatal filled in with black; brownish mottlings on subventral fold, subventer colorless. Body a little flattened; setae long and pale."

Remarks. For the present I consider this specifically distinct from the South American *A. gilvicostalis* (Hampson), which is larger and more robust and which appears to have somewhat more pointed valves and broader processes of the vinculum.

Tribe Odontiini

Type-genus: *Odontia* Duponchel

Male gnathos nearly as long as uncus, arising from an obvious V-shaped union of the lateral arms. Mostly small forms, often noctuid-like in facies. The group is widespread, but is especially well developed in arid and subarid parts of the Holarctic region.

Microtheoris Meyrick

Type-species: *Rhodaria ophionalis* Walker, by monotypy and original designation.

Microtheoris Meyrick, 1932: 245.

Frons flat, oblique and prominent; maxillary palpus ending in a tuft of scales; labial palpus porrect, third joint somewhat decurved, hidden in a tuft of scales; tongue vestigial; antenna filiform, scaled above, ciliated below; eye moderate-sized to large; body slender; legs moderately long; tibial spurs well developed, medial pair in distal fourth of hind tibia. Forewing broad, apex acute, outer margin somewhat oblique, and area slightly expanded near base, but without a tuft of scales; cell rather narrow, reaching about two-thirds length of wing; R_1 arising from cell about four-fifths of the way from base to discocellular; R_2 from angle of cell; R_3 and R_4 stalked about one-quarter of the way to margin; R_5 from upper angle of cell, not basally approximated to R_{3+4}; M_1 from well below angle of cell; discocellular short, straight, erect; M_2, M_3, Cu_1 and Cu_2 spaced at increasing intervals, not basally approximated; Cu_2 arising four-fifths of the distance from base to Cu_1; anal loop incomplete. Hind wing rounded, rather narrow; R_s anastomosed for a considerable distance with Sc; M_1 in line with R; radial bridge strongly oblique; cell short anteriorly, upper part of discocellular erect, forming an abrupt angle with the very oblique and somewhat excurved lower part; M_2, M_3 and Cu_1 well spaced at end of cell; Cu_2 arising at about three-quarters of distance from base to Cu_1.

Male Genitalia. Uncus quadrate, sides decurved and clothed with anteriorly directed hairs; gnathos triangular, evenly tapering, reaching nearly to tip of uncus; penis short and slender; valve short and broad, expanded and rounded towards tip; costa somewhat thickened, and bearing a sharp triangular process.

Female Genitalia. Ovipositor sclerotized; apophysis slender and thread-like, but well sclerotized; bursa globular and membranous.

Key to the Species

1. Antemedial line distinct, pinkish, extruding obliquely along cubital stem ..... *vibicalis* Zeller
   Antemedial line absent or obscurely indicated ..... *ophionalis* Walker

Microtheoris vibicalis (Zeller), new combination

Figs. 9, 79-81, 174.

Botis vibicalis [sic] Zeller, 1873: 208.
Botis vibicalis Zeller, 1873: 209, Pl. III, Fig. 4.
Phlyctaenodes vibicalis, Hampson, 1899: 212.
Loxostege vibicalis, Fernald, 1902: 384.

Head and palpi light greyish buff, frons paler on side; thorax above light greyish buff; abdomen above greyish fuscous; body beneath and legs greyish fuscous. Forewing above yellowish cream colour; costa narrowly fuscous to beyond cell; a strongly oblique pink band from costa at end of cell to posterior margin just beyond base; an oblique, straight or slightly curved, pink, postmedial band from costa just before apex to posterior margin at or just before tornus, joined to antemedial band by a pink band along posterior margin; a distinct, fuscous, marginal line; fringe pink, darkest in basal half. Hind wing above dark fuscous; fringe fuscous, a darker line in basal half. Forewing beneath light brown, markings of upper surface obscurely repeated in greyish fuscous. Hind wing beneath as above, but a little paler. Expanse nine to 11.5 mm.

Male Genitalia. Uncus somewhat tapered posteriorly; gnathos triangular, relatively broad; vinculum normal; penis unarmed; valve broadly rounded, with a costal inflation ending in a short thumb-shaped process a little beyond middle of valve.

Female Genitalia. Not studied.

Type. Holotype, male, Texas, Boll, in Museum of Comparative Zoology, Cambridge, Mass.

Range. Texas, New Mexico and doubtless northern Mexico.

Material Examined. Five specimens from the following localities: Texas: Wharton; Corpus Christi; Georgetown; New Mexico: White City, Eddy Co.

Life History. Unknown.

Microtheoris ophionalis (Walker)

Figs. 82-84, 175, 216.

Rhodaria ? ophionalis Walker, 1859: 316.

Head and thorax above varying from dull buff to reddish brown; abdomen above and body beneath dull fuscous; legs light buff. Forewing above varying from pale buff to reddish brown, veins sometimes contrastingly paler; antemedial line obsolete or indicated by a faint vertical line on inner margin; a fuscous dot or bar on discocellulars, often obsolete; a postmedial grey or brown band, parallel to outer margin, its borders fuscous, the inner edge expanded into a tooth on anal fold; a pale yellowish or buff subterminal fascia immediately beyond postmedial band; a dark terminal line and a dark line in base of fringe. Hind wing above varying from pale grey with a dark postmedial shade to uniform dark fuscous. Under side varying from buff to dark fuscous, forewing and often hind wing with a diffuse darker postmedial shade. Expanse nine to 15 mm.

Male Genitalia. Uncus subrectangular; gnathos slender, its tip finger-like, pointed; valve broadly rounded, costa narrowly inflated to apex, bearing a triangular flange before middle of valve; penis unarmed.

Female Genitalia. Ovipositor sclerotized; apophyses slender and thread-like, but well sclerotized; bursa globular and membranous.

Range. Florida to California, north to southern Ontario and central British Columbia, south to Mexico and perhaps to northern South America.

Life History. Unknown.

Remarks. Most authors have distinguished two nominal species; however I cannot satisfy myself that there is more than one geographically variable species

in the extensive material before me, and I therefore follow Meyrick in synonymizing *sesquialteralis* with *ophionalis*. Zeller figures as *sesquialteralis* a pale form with definite cross bands and as *nasionialis* a smaller ferrugineous form with pale veins and less definite transverse markings. Of the two specimens of *nasonialis* the second was transitional to *sesquialteralis*. Both of these forms were small – smaller than *vibicalis*. They correspond well to material from central Texas and from Oklahoma, and I believe the differences are no more than individual. Specimens from Mississippi and Florida are closely similar. Specimens from western Texas, New Mexico and Arizona are much larger and somewhat paler and represent a different subspecies; material from California to British Columbia is also large and is even paler, and has a definite dark postmedial band on the forewing; it is separable as a third subspecies; a fourth subspecies, characterized by deep-ferrugineous forewings and dark-fuscous hind wings, occurs in southern Ontario and Michigan.

Microtheoris ophionalis ophionalis (Walker)

Figs. 10, 11.

Rhodaria ? ophionalis Walker, 1859: 316.
Botis sesquialteralis Zeller, 1873: 209, Pl. 3, Fig. 5.
Botis nasonialis Zeller, 1873: 209, Pl. 3, Fig. 6.
Phlyctaenodes ophionalis, Hampson, 1899: 212.
Phlyctaenodes sesquialteralis, Hampson, 1899: 212.
Phlyctaenodes nasonialis, Hampson, 1899: 212.
Loxostege ophionalis, Fernald, 1902: 384.
Loxostege sesquialteralis, Fernald, 1902: 384.
Loxostege nasonialis, Fernald, 1902: 384.
Microtheoris ophionalis, Meyrick, 1932: 245.

Size small, ground colour of forewing varying from pale buff to reddish-brown; veins usually contrastingly pale in darker specimens; fuscous antemedial half-line present or absent; discal dot or bar present or absent, postmedial band usually plainly visible; hind wing varying from medium grey with a fuscous postmedial shade to dark fuscous. Expanse nine to 11 mm.

Types. Of *ophionalis* Walker, lectotype, United States, Doubleday, in British Museum (Natural History), London, England, by present selection; of *sesquialteralis* Zeller, holotype, Texas (Boll), in Museum of Comparative Zoology, Cambridge, Mass.; of *nasonialis* Zeller, holotype, Texas, 20 Aug., Belfrage, in British Museum (Natural History). Of the two specimens of *nasonialis* mentioned in the original description, one is qualified as "Var. b"; the other therefore is the holotype.

Range. Florida to central Texas, north to Oklahoma.

Material Examined. Ten specimens from: Texas: Comfort; Oklahoma: Payne Co.; Mississippi: A. & M. College; Florida: Stemper; Gainesville.

Remarks. The lectotype of *ophionalis* closely resembles the two Florida specimens noted above, but in the absence of a precise type locality the subspecific assignment of the name is arbitrary. The other two names definitely apply to this subspecies.

Microtheoris ophionalis lacustris, new subspecies

Fig. 12.

On the average larger and darker than the nominate subspecies; forewing dark fulvous or brown, transverse dark bands very weakly differentiated in most specimens, hind wing dark fuscous, dark subterminal shade rarely evident. Expanse 10.5 to 12 mm.

Holotype, male, Harrow, Ont., Aug., 1931, G. M. Stirret; allotype, female, Chatham, Ont., 1931, Chatham Lab. Light Trap 2, No. 355. Fourteen paratypes, from: Ontario: Harrow; Chatham; Grand Bend; Port Colborne; Michigan: Gratiot Co. Type No. 6958, C.N.C.

A specimen from Williamsville, Mo., is doubtfully referable to this subspecies.

***Microtheoris ophionalis eremica*, new subspecies**

Fig. 13.

Larger and paler than either of the previous subspecies. Forewing usually light pinkish ferrugineous, veins often paler, dark transverse markings usually obscure, and obvious pale subterminal band. Expanse 10 to 13 mm. (normal range 11 to 13 mm.)

Holotype, male and allotype, female, Limpia Canyon, Jeff Davis Co., Texas, May 20, 1950, E. C. Johnston. Thirty-four paratypes from: Texas: Limpia Canyon and Fort Davis, Jeff Davis Co., April and May; Alpine, Brewster Co., May; New Mexico: White City, Eddy Co., May; Arizona: Huachuca Mts., May; Madera Canyon, Sta. Rita Mts., Sept. Type No. 6959, C.N.C.

***Microtheoris ophionalis baboquivariensis*, new subspecies**

Fig. 14.

Closely similar to the preceding subspecies, but smaller and paler, with the transverse bands very inconspicuous. The type series seems quite uniform and differs obviously from more easterly specimens. Expanse 10 to 12 mm.

Holotype, male, allotype, female, and five paratypes, Baboquivari Mts., Ariz., April and May, Grace H. and John L. Sperry. Type No. 6960, C.N.C.

***Microtheoris ophionalis occidentalis*, new subspecies**

Figs. 15, 16.

The largest subspecies; with pale-buff ground colour, and with contrasting, greyish fuscous postmedial line on forewing. Hind wing varying from white with fuscous postmedial band to almost uniform fuscous. Expanse 12 to 15 mm.

Holotype, male, allotype, female, Oliver, B.C., Aug., 1953, J. E. H. Martin; 21 paratypes, Oliver and Osoyoos, B.C., April to September. Type No. 6961, C.N.C.

The following additional material is excluded from the type series. Forty-one specimens from: British Columbia: Seton Lake; Vaseaux Lake; Jesmond, 1500 ft.; Idaho: Wallace, 3000 ft.; Pine Creek, Shoshone Co., 2600 ft.; Montana: Lookout Pass, Bitterroot Mts., Mineral Co., 4500 ft.; California: Petaluma; San Lucas.

There is considerable local variation in the British Columbia specimens: those from Oliver and Osoyoos are small and pale; the considerable series from Vaseaux Lake is variable in size and heavily marked; the specimens from Jesmond are large and pale. The Idaho and Montana specimens are small and heavily marked. The California specimens are very uniform and have a somewhat tawny tint, but seem to fall within the range of variation of the Oliver series. The Oliver series shows no obvious seasonal variation; there appear to be three generations with peak flight periods in early May, late June and mid-August. More study of the distribution and variation of this subspecies is desirable.

***Rhodocantha*, new genus**

Type-species: *Rhodocantha diagonalis* new species

Frons flat and oblique; gena naked; maxillary palpus ending in an expanded tuft of scales; labial palpus porrect, scaled, third joint pointed and almost hidden in the scales of the second; tongue slender, but well developed; eye and

ocellus well developed; antenna slender, filiform, scaled above, pilose below; legs rather slender; mid and hind tarsi longer than corresponding tibiae; tibial spurs well developed, mid spurs of hind tibia arising at about three-fifths of distance from base to tip. Forewing with costa and inner margin nearly straight, outer margin lightly curved; R_1, R_2, and R_{3+4} successively from just before angle of cell; R_3 and R_4 stalked about half-way from cell to apex; R_5 and M_1 from angle of cell; discocellular curved, somewhat oblique; M_2, M_3 and Cu_1 spaced at lower angle of cell; Cu_2 arising at about three-quarters of the distance from base to end of cell; 2nd A straight; 3rd A free, running obliquely to near middle of inner margin; and area not expanded and without scale-tuft. Hind wing long and rather narrow, outer margin rounded; Sc and R_s stalked about one-third of distance from end of cell to margin; M_1 arising opposite radial stem; discocellular vertical as far as middle then sharply bent outward; M_2 and M_3 arising close together at end of cell, their basal portions weakly approximated; Cu_1 from well before end of cell; Cu_2 arising at about two-thirds of distance from base to end of cell.

Male Genitalia. Uncus moderately narrow, parallel-sided, weakly bilobed distally; tegumen not expanded; vinculum narrow; juxta dorsally emarginate; valve with costa arched, tubularly inflated in basal half, sacculus short, inflated; penis short and stout.

Female Genitalia. Ovipositor sclerotized and blade-like, evidently fitted for piercing, solidly joined to strong, rod-like posterior apophyses; genital tergite strongly sclerotized, with short, strong anterior apophyses. Bursa small and weak.

Rhodocantha diagonalis, new species

Figs. 17, 85-87, 176, 217.

Head and thorax pinkish brown, eye black, abdomen brown with a pale band at base; forewing above pinkish brown, basal area darker; antemedial band white, bordered inwardly with reddish brown, straight and very oblique from inner margin at one-fourth to beyond end of cell at R_5, then abruptly becoming obsolete; disc uniformly pale pinkish brown; postmedial band white, bordered outwardly with reddish, parallel to and close to outer margin; terminal area narrow, reddish; fringe broad, the basal part reddish, the outer part pale tan; hind wing above uniformly fuscous, except for a narrow blackish marginal area; fringe broad, basally blackish fuscous, distally light tan. Under side greyish brown, veins a little darker; fringes light tan with a darker line near base.

Genitalia as described for the genus.

Holotype, male, allotype, female, Alamogordo, Otero Co., New Mexico, May 10, 1950, E. C. Johnston. Seven paratypes from Alamogordo and from the following localities in Brewster Co., Texas: Marathon; Big Bend National Park and Terlingua. Type No. 6962, C.N.C.

Life History. Unknown.

Frechinia, new genus

Type-species: *Titanio belianthiales* Murtfeldt

Frons flat or weakly rounded, oblique and somewhat prominent; maxillary palpus ending in an expanded tuft of scales; labial palpus porrect or a little decurved, third joint hidden in the pointed tuft of hair-like scales arising from the second; tongue weak or obsolescent; eye and ocellus well developed; antenna slender and filiform; legs robust; hind tibia longer than tarsus, middle spurs arising at three-quarters of distance from base to tip of tibia. Forewing broad, with costa slightly curved in outer part; outer and inner margins strongly curved,

tornal angle poorly defined; cell broad; R_1 arising three-fourths of the way from base to upper angle of cell, R_5 then curved, R_2 and R_{3+4} arising from angle of cell, either closely approximated or stalked for a short distance; R_5 and M_1 straight, separated, discocellular oblique; M_2, M_3 and Cu_1 short, well spaced; Cu_2 arising four-fifths of the way from base to Cu_1; 3rd A short, open; anal area expanded; inner margin bearing a weak tuft before middle. Hind wing with outer margin rounded; Sc and R_1 anastomosed for a considerable distance, M_1 in line with R, discocellular sharply angled in middle, lower part strongly oblique; M_2 and M_3 arising at end of cell but separated from each other by a space; Cu_1 arising shortly before end of cell; Cu_2 arising two-thirds of the way from base to end of cell.

Male Genitalia. Tegumen domed, uncus broad and weakly sclerotized, with heavy areas of hair on each side; gnathos narrow, triangular, making a weak angle with lateral arms; valve short and simple, parallel-sided, with flutings inconspicuous.

Female Genitalia. Ovipositor with short, subquadrate, sparsely setose lobes; apophyses short and slender; cross-bar of posterior apophysis with a plate-like expansion; bursa weak and membranous.

I take pleasure in naming this genus for Mr. Donald P. Frechin, the well-known lepidopterist of Bremerton, Washington.

Key to the North American Species

1. Postmedial line parallel to outer margin 2
   Postmedial line closer to outer margin anteriorly than posteriorly 3
2. Ground colour of forewing tan ..... *laetalis* Barnes and McDunnough
   Ground colour of forewing grey ..... *criddlealis* Munroe
3. Apex of forewing acute, almost falcate ..... *lutosalis* Barnes and McDunnough
   Apex of forewing slightly rounded 4
4. Ground colour of forewing tan, postmedial line contrastingly dark .. *texanalis*, new species
   Ground colour of forewing grey, postmedial line contrastingly pale 5
5. Veins beyond cell radially white-lined ..... *murmuralis* Dyar
   Veins beyond cell not radially white-lined ..... *helianthiales* Murtfeldt

Frechinia murmuralis (Dyar), new combination

Titanio murmuralis Dyar, 1917: 72.

"Forewing dark gray, marked with pure white; a subterminal line starts from near apex, curving close to margin, oblique below to middle of inner margin; cell white with two black lines; costa and submedian fold white to two-thirds; all the veins beyond cell radially white lined; a black terminal line, preceded by white; fringe white with two gray interlines. Hind wing gray with whitish outer line; fringe as on forewing. Expanse, 12 mm.

"Type, female, No. 21293, U.S. Nat. Mus.; Sabinal, Texas, March 2, 1911 (F. C. Pratt).

"Close to *T. helianthales* Murt., but smaller, the outer line narrower and more sharply drawn, the veins white-lined."

I have no material of this species at the time of writing. My notes on the type confirm that it is smaller and streakier than *F. helianthiales*.

Frechinia helianthiales (Murtfeldt), new combination

Figs. 18, 88-90, 177, 218.

Titanio helianthiales Murtfeldt, 1897: 71.
Pionea thyanalis Druce, 1899: 557, Pl. 101, Fig. 5.
Titanio helianthiales, Fernald, 1902: 387.
Autocosmia helianthiales, Forbes, 1923: 559.

Frons slightly rounded, prominent; frons, vertex and upper surfaces of palpi light clay-colour, side of palpus and head somewhat darker; patagium, tegula and dorsal surface of thorax mixed light and darker clay-colour; abdomen uniformly of the darker clay-colour. Forewing above pale clay-colour, heavily sprinkled on discal and postmedial areas with a mixture of fuscous and light-tan scales; base and an area running from discocellulars on to costa uniformly pale; postmedial line pale, curving from costa to approach outer margin between R_5 and M_1 then curving gently to inner margin near middle, cutting across tornal angle; a pale, outwardly dark-bordered, marginal line; fringe grey, darker in outer half. Hind wing uniformly grey; fringe as on forewing. Forewing beneath dark fuscous, with an obscure paler postmedial shade and a dark subterminal line parallel to margin followed by a whitish-buff terminal line; fringe white with a dark mid-line. Hind wing beneath as above.

Male Genitalia. Uncus short and broad, tegumen strongly humped; valve with costa hardly inflated.

Female Genitalia. Ovipositor with short, subquadrate, sparsely setose lobes; posterior apophysis with broadened, plate-like cross-bar; both anterior and posterior apophyses short and slender.

Types. From the four syntypes I select as lectotype a male, C. Mo., in United States National Museum.

Material Examined. Seven specimens from Arizona: Paradise, June; Chiricahua Mts., May; 9000-9800 ft., July; Nogales, June; Missouri: St. Louis, May.

Life History. Larva making a large blotch mine in *Helianthus* leaves. Miss Murtfeldt gives a detailed description.

Frechinia lutosalis (Barnes and McDunnough), new combination

Figs. 19, 178.

Titanio lutosalis Barnes and McDunnough, 1914: 238, Pl. I, Fig. 17.

Frons and vertex whitish buff, palpi a little browner; thorax above whitish buff, with ochreous median stripes on patagium and tegula; abdomen above greyish buff; body beneath and legs greyish buff. Forewing with apex acute; ground colour light grey, heavily dusted with brownish fuscous on basal half, beyond cell to apex and in a subterminal band; a pale streak between anal fold and 2nd A; a dark discocellular dot; a dark postmedial line from costa near apex, narrowly excurved then strongly oblique to posterior margin at middle. Hind wing with apex unusually sharp; ground colour pale grey, weakly infuscated towards termen. Forewing beneath greyish fuscous; hind wing beneath greyish white. Expanse 19 mm.

Male Genitalia. Uncus bilobed, the sides decurved and finely setose; tegumen domed; gnathos Y-shaped, pointed, juxta long and slender; valve short and rounded, with a subcostal thickening in basal third; penis short and cylindrical.

Female Genitalia. Not studied.

Closely similar to *F. helianthiales* but larger, with apex of forewing more acute, postmedial line closest to outer margin at a point anterior to vein R_5. Labial palpus surpassing eye by less than twice its diameter; tongue short and weak, concealed in repose by palpi.

Types. Two males, one female, syntypes, Jemez Springs, N.M., and Boulder, Colo., in United States National Museum. From these I select a male from Jemez Springs, marked, "*Titanio lutosalis* B. & McD. Type ♂," as lectotype.

Material Examined. One male, Beaver, Utah.

Life History. Unknown.

Frechinia laetalis (Barnes and McDunnough), new combination

Figs. 20, 179, 219.

Titanio laetalis Barnes and McDunnough, 1914: 238, Pl. II, Fig. 16.

Frons less prominent than in the preceding two species; labial palpus exceeding eye by 1½ times eye diameter; tongue obsolete. Head and palpi light yellowish buff, frons paler at side, eye black; occipital region pale; thorax above clothed with mixed ferrugineous and pale scales; abdomen above fuscous, anterior margins of segments pale; body beneath and legs pale greyish. Forewing short and broad, pale clay-coloured above, heavily suffused with orange-tan; base narrowly pale, the pale area extending along inner margin to the blackish scale tuft, the tuft situated well before middle of inner margin; a diffuse pale antemedial band perpendicular to costa, widening and meeting postmedial line at inner margin; space from the line of the discocellulars to the postmedial line pale; postmedial line black, almost parallel to outer margin, obsolescent anteriorly and posteriorly, bordered outwardly by a narrow pale zone; terminal line narrow, black, uniform; fringe broad, pale, with a blackish line before middle. Hind wing above light grey, becoming darker towards apex and termen; fringe pale, silky, with a diffuse grey line before middle. Forewing below dark greyish brown, hind wing light grey, both wings with terminal area slightly paler; inner margin of forewing narrowly light grey; costal margin of hind wing brownish on basal half; an indistinct darker terminal line; fringes as above. Expanse nine to 11.5 mm.

Male Genitalia. Uncus sagittiform; tegumen weakly domed; costa of valve distinctly, though weakly, inflated.

Female Genitalia. Ovipositor with short, subquadrate, very sparsely setose lobes; apophyses short and rather slender, cross-bar of posterior apophysis expanded and flange-like. Bursa weak and membranous.

Types. Fourteen males, two females, syntypes, Redington and Baboquivari Mts., Ariz.; Loma Linda, San Bernardino Co., Calif.; Denver, Colo., mostly in United States National Museum. I select a male from Redington, Ariz., marked, "*Titanio laetalis* B. & McD. Type ♂," as lectotype.

Range. Western Texas to southern California, Colorado and Oregon.

Material Examined. Twenty-one specimens from: Texas: Big Bend National Park, Brewster Co.; Arizona: Badger; Tucson; St. Xavier Mts., Tucson; California: Borego; Essex; Palm Springs; Nevada: Railroad Canyon, White Pine Co.; Oregon: Biggs.

Life History. Unknown.

Frechinia criddlealis (Munroe), new combination

Figs. 21, 22, 180, 220.

Titanio criddlealis Munroe, 1951: 168.

Male. Forewing with ground colour, most of the veins, and the median and submedian folds pale grey with a few fulvous scales interspersed; large diffuse basal, medial, and postmedial patches of dark grey with scattered fulvous scales; a narrow, ill-defined, white, postmedial line curving somewhat more strongly than the outer margin, beginning at the costa about four-fifths of its length from the base and ending at the inner margin; subterminal space fulvous, with some fuscous scales on its inner half; terminal line narrow, black, continuous; fringe broad, white, with an interrupted black line followed by a continuous grey one. Hind wing white, with a few scattered grey scales, and with diffuse subterminal and terminal grey bands; fringe white, with an interrupted grey line. Under side of forewing uniformly fuscous, with fringe as above, of hind wing, similar to upper side. Female similar to male, but with the hind wing above and below

uniformly fuscous, except for the fringe, which is white with a grey line.

This species stands close to *T. laetalis*, but differs in the darker and more strongly contrasting maculation, the general grey colour, and the uniformly dark under side of the forewing. Expanse 14 to 16 mm.

Male Genitalia. Closely similar to those of *T. laetalis* Barnes and McDunnough, but with the gnathos and the juxta both somewhat more slender.

Female Genitalia. Ovipositor lobes subquadrate, sparsely setose; apophyses slender and weak; cross-piece of posterior apophysis expanded into a plate; ductus and bursa short, membranous.

Types. Holotype, male, allotype, female, and four male paratypes, Aweme, Man. Type No. 5936, C.N.C.

Range. Known only from the type locality, but probably more widely distributed in the prairies.

Life History. Unknown.

Frechinia texanalis, new species

Figs. 23, 221.

Frons flat and oblique; labial palpus exceeding eye by about twice eye diameter. Head and palpi pale yellowish buff, sides of frons whitish; eye black. Thorax and abdomen above and below light clay-colour. Forewing above light clay-colour; disc lightly suffused with ferrugineous, partly concentrated in ill-defined oblique streaks; traces of several obscure black internervular streaks beyond cell, extending to postmedial line; postmedial line narrow, ill-defined, brown suffused with black, weakly interrupted along veins, oblique from costa to R_5 near margin, then turning rather abruptly, diverging very weakly from outer margin as far as Cu_1, very weakly angled at that vein and diverging a little more rapidly, continuing in the same direction to inner margin; an obscure subterminal dark shade and a weak black terminal line; fringe white, containing black lines at and beyond middle. Hind wing above light grey, darker towards margin; fringe light grey, with two diffuse darker lines. Under side of forewing uniformly dull fuscous, of hind wing light grey, a little darker towards termen; fringe of forewing white with a diffuse grey band followed by a better-defined black line; fringe of hind wing light grey with two darker bands.

Female Genitalia. Ovipositor with short, subquadrate, sparsely setose lobes; apophyses short and slender, but well sclerotized; cross-bar of posterior apophysis expanded into a triangular plate. Bursa small and membranous.

Holotype, female, Ft. Davis, Jeff Davis Co., Texas, May 20, 1950, E. C. Johnston. Type No. 6963, C.N.C.

Life History. Unknown.

Procymbopteryx, new genus

Type-species: *Pionea belialis* Druce

Frons flat and oblique, smooth-scaled, vertex short, somewhat tufted; gena naked; labial palpus porrect, with fine, close scaling, exceeding head by less than its length, third segment hidden in scales of second; maxillary palpus terminally dilated with scales; proboscis slender and rather small; eye large; ocellus small but distinct, close to eye; antenna basally stout in male, gradually tapering, strongly ciliated below, scaling above dilated laterally at ends of segments, giving a somewhat serrate appearance; body slender but short; praecinctorium flaplike, longitudinal, rather long, distally dilated with scales; legs fairly short. Forewing with costa straight, but deflected near tip; outer margin oblique, rounded; tornus rounded; posterior margin rounded, with a weak, deciduous tuft of scales; costal area broad; R_1 from cell at three-fourths, rather strongly oblique; R_2 and R_{3+4}

weakly approximated basally; stalk of R_{3+4} considerably shorter than free portions; an inconspicuous fovea between R_{3+4} and R_5, R_5 deflected and approximated to M_1 basally; discocellular weakly curved and oblique; M_2 and M_3 from posterior angle of cell, not approximated basally; Cu_1 from basad of angle; cross-vein m-cu at an angle to basal part of Cu_1; Cu_1 not approximated to M_3; Cu_2 from cell at five-sixths; 2nd A straight; 3rd A weak. Hind wing with Sc strongly anastomosed with R_1; R_s and M_1 briefly stalked; discocellular erect in anterior part then abruptly angled and strongly oblique to posterior angle of cell; M_2, M_3 and Cu_1 arising close together at posterior angle, weakly approximated basally; Cu_2 from cell at four-fifths; three anals present.

Male Genitalia. Uncus short, broad, soft, bilobed, setose; tegumen very strongly domed; gnathos broad, short, triangular; vinculum narrow; juxta moderately developed; penis small, cylindrical, slightly bent, unarmed; valve with a strong anterior articulating sclerite; costa thickened in basal half, with a prominent anteriorly directed tooth at about middle, from which a subcostal thickening extends distad a short distance; distal part of valve rounded; sacculus expanded; a longitudinal row of setae on middle of valve.

This genus does not differ significantly in external characters from *Cymbopteryx*, but the strong specializations of the male genitalia make its separation necessary.

Procymbopteryx belialis (Druce), new combination

Figs. 24, 91-93, 181.

Pionea belialis Druce, 1899: 557, Pl. 101, Fig. 4.
Pionea belialis, Dyar, 1902: 397.
Cybalomia belialis, Fernald, 1902: 386.
Titanio belialis, Barnes and McDunnough, 1917: 133.

Head above pale clay-colour, median zone of frons a little darker, dorsal surface of palpi tinted with ochreous; sides of palpi and head light brown; eye black. Thorax and abdomen above light brown, irregularly sprinkled with pale scales; venter of abdomen whitish. Forewing above light clay-colour, thickly and evenly dusted with dark-brown scales; longitudinal veins narrowly pale; antemedial band absent; postmedial line regularly excurved, its general course oblique from apex to inner margin somewhat beyond middle; the line black, bordered on both sides by zones of the pale ground-colour free from black dusting, the inner zone a little wider than the outer; marginal line regular, entire, consisting of a narrow zone of undusted ground-colour, followed by a fine black line; fringe light grey, with a diffuse darker line in the basal half. Hind wing above uniformly light grey, with a fine, faint, darker, terminal line; fringe as on forewing. Forewing beneath almost uniformly light fuscous; very faint indications of postmedial band, consisting of a pale shade followed by a dark one; hind wing beneath light grey, with a faintly indicated darker postmedial line parallel to outer margin; fringes as above.

Male Genitalia. As described for the genus.

Female Genitalia. Not studied.

Type. Amula, Guerrero, Mexico, 6000 ft. (H. H. Smith).

Range. Recorded by Dyar from Colorado; seen by me from Arizona and Mexico; possibly conspecific material seen from Bolivia.

Material Examined. Eighteen specimens, Arizona: Paradise, June, Aug., Sept.; Nogales, Aug.; Tucson, Aug.; Madera Canyon, Sta. Rita Mts., Aug.

Life History. Larva according to Dyar a leaf miner on *Coleosanthus grandiflorus* (Hook.) [Compositae] in Colorado. The mine is a large brown blotch, occupying the whole thickness of the leaf at the terminal part, occupying

three-fourths or more of the area of the leaf; at maturity the larva emerges and spins a three-cornered cocoon in one of the young soft leaves at the end of the shoot. The leaf becomes wrinkled as it grows. Dyar describes the larva as follows:

"Head small, flat, half retracted in joint 2, black, the sutures pale. Cervical shield bisected into two quadrangular halves, distinctly separate. Body nearly cylindrical, uniform, robust, incisures only slightly marked; anal plate brownish; feet normal. Pale yellow with large, conspicuous, round, black tubercles; ia + ib, iia + iib, iv + v, iiia present, large situated above and before the spiracle, vii a single brown-black tubercle, viii distinct on the legless segments. Crochets of abdominal feet in a broad ellipse, narrowly broken outwardly. Thoracic feet black, the abdominal ones like the body. Spiracles small, black-rimmed."

The tachinid parasite *Eucoronimyia hastata* (Coq.) has been reared from this species by Dyar.

Cymbopteryx, new genus

Type-species: *Cymbopteryx fuscimarginalis*, new species

Frons flat, oblique and prominent; maxillary palpus terminally dilated with scales; labial palpus porrect, conically scaled, third joint concealed; hind tarsus shorter than tibia; mid spurs arising two-thirds of the way out on hind tibia. Forewing with costa slightly curved, inner and outer margins slightly or considerably curved, tornal angle obtuse or obscure; inner margin with a tuft of scales, sometimes weakly developed; R_1 arising well before end of cell, R_2 and R_{3+4} arising close together at upper angle of cell; R_{3+4} well separated at base from R_5, the space occupied by a fovea in the male; R_5 basally approximated to M_1; discocellular curved, outwardly oblique; M_2, M_3, Cu_1 and Cu_2 spaced at increasing intervals around end of cell. Hind wing with Sc and R_s anastomosed for a moderate distance beyond cell; M_1 in line with radial stem; discocellular strongly bent outward in lower part, M_2 and M_3 from end of cell, their basal portions approximated; Cu_1 from shortly before end of cell; Cu_2 from about three-fourths of the way out on cell.

Genitalia as in *Frechinia*, to which this genus is closely related, differing in the presence of the fovea in the male and the displacement of R_5.

Key to the North American Species

1. Postmedial band with pale element conspicuous ..... *fuscimarginalis*, new species
   Postmedial band with dark line much more conspicuous than pale element
   ..... *unilinealis* Barnes and McDunnough

Cymbopteryx fuscimarginalis, new species

Figs. 25, 94-96, 182, 222.

Head and palpi light grey above, brown on sides; eye dark brown; thorax and abdomen above light brownish grey, somewhat paler on disc, beneath light grey, with brownish tints in some places. Forewing with tornal angle much better developed than in *belialis*, inner margin almost straight and hardly tufted. Ground colour of forewing above very pale clay-colour, thickly dusted with darker scales, the dusting darker beyond than before postmedial band; postmedial band rather broad, pale and undusted, well-defined outwardly but diffuse inwardly, running parallel to outer margin and a short distance from it; a narrow, pale, undusted, marginal band with traces of a dark outer border; fringe light grey with a darker mid-line. Hind wing above whitish grey, with a uniformly fairly wide darker marginal band; fringe as on forewing. Forewing beneath light fuscous with a diffuse pale postmedial band, widening posteriorly; hind wing beneath much as above.

Male Genitalia. Uncus broadly bilobed, distally truncate, laterally rounded and curved, with anteriorly directed setae; tegumen moderately wide, domed; gnathos with base fairly broad, distal part clavate, pointed; vinculum narrow; juxta slender; valve rather short, distally rounded, with a subcostal strengthening ridge; penis tubular, of moderate proportions, unarmed.

Female Genitalia. Ovipositor with broad, poorly separated, sparsely setose lobes; posterior apophysis short and thread-like, cross-bar expanded into a flange; anterior apophysis a little stronger; bursa delicate and tubular, with a narrow collar on ductus near ostium.

Holotype, male, allotype, female, Tucson, Arizona, O. Bryant; six paratypes, Arizona: Tucson; New River, Maricopa Co. Holotype, allotype, and five paratypes, type No. 6964, C.N.C.; one paratype in California Academy of Sciences.

Life History. Unknown.

Cymbopteryx unilinealis (Barnes and McDunnough), new combination

Figs. 26, 97-99, 183, 223.

Loxostege unilinealis Barnes and McDunnough, 1918: 161. Pl. 24, Fig. 1.
Loxostegopsis phaeopasta Hampson, 1919: 326. New synonymy.

Frons prominent and with a weak median carina; labial palpus with shorter vestiture than in *belialis*. Head above light grey, palpus darker; body and legs grey. Forewing pale argillaceous, heavily and uniformly dusted with fuscous; postmedial line fuscous, gradually becoming thicker from front to back, outwardly oblique from costa to R_4, there curved rather abruptly to proceed in an inwardly oblique and almost imperceptibly sinuous course to inner margin at two-thirds of the distance from base to tornus; postmedial line connected to apex by an oblique shade emanating from joint of nearest approach to outer margin; marginal line fuscous, fine; fringe light grey, with a diffuse darker line in basal half. Hind wing pale grey, with obscure darker terminal line; fringe as on forewing. Under side of forewing fuscous grey, of hind wing light grey; fringes beneath as above, but with dark line much fainter.

Male Genitalia. Uncus trapezoidal; tegumen domed, not very wide; gnathos slender, triangular; valve short and somewhat oblong, costa strengthened and tubular for two-thirds of its length; penis short and curved.

Female Genitalia. Ovipositor with somewhat broadened lobes, with very short, fairly numerous setae; apophyses short, posterior apophysis somewhat flattened and plate-like posteriorly; ductus and bursa small and membranous.

Types. Holotype, female, of *unilinealis*, Redington, Ariz., in United States National Museum; holotype, male of *phaeopasta*, Phoenix, Ariz., in British Museum (National History).

Range. Arizona.

Material Examined. The types and nine other specimens, Arizona: Florence, Apr.; Tucson, Jan.; New River, Maricopa Co.; Sta. Cruz Village, Cobabi Mts.

Life History. Unknown.

Edia Dyar

Type-species: *Edia microstagma* Dyar

Edia Dyar, 1913: 320.

Frons strongly produced into a rounded prominence; maxillary palpus heavily scaled but hardly dilated; labial palpus densely scaled, rather slender, porrect, third joint conically scaled and drooping a little. Body fairly stout, legs slender; hind tarsus as long as tibia, middle spurs arising from tibia three-fourths of the way from base to apex. Forewing with apex and outer margin rounded; inner margin rounded and bearing two distinct scale-tufts; R_1 arising well before end of cell;

R_2 arising close to R_{3+4}, a little before end of cell; R_5 and Cu_1 arising just below upper angle of cell; M_2 and M_3 not basally approximated, but arising close together near end of cell; Cu_1 from distinctly before end of cell; Cu_2 from cell about two-thirds of the way from base to apex; anal loop incomplete. Hind wing with Sc and R_1 anastomosed beyond cell; discocellular outwardly oblique in its lower course; M_2 and M_3 arising close together at end of cell, but with their basal portions not approximated; Cu_1 from a little before, Cu_2 from well before, end of cell.

Key to the Species

1. Medial brown shade of forewing with its inner border definite, arcuate ..... *semiluna* Smith
   Medial brown shade of forewing inwardly diffuse ..... *minutissima* Smith

***Edia semiluna* (Smith)**

Figs. 27, 100-102, 184, 224.

Lythrodes semiluna Smith, 1905: 67.
Cynaeda bidentalis Barnes and McDunnough, 1912: 33, Pl. 3, Figs. 2, 5.
Edia microstagma Dyar, 1913: 320.

Head pale buff, palpi brown on sides, eye and ocellus black; thorax and basal segment of abdomen pale buff, remainder of abdomen light fuscous, variegated with pale buff; terminal segment pale buff. Forewing creamy, irregularly suffused with light tan; a broad dark median fascia curving from costa at one-third from base through cell to outer tuft of inner margin; the basal side of the fascia a little irregular, but well defined, the outer side irregular and diffuse; a pale spot on the fascia in cell; a series of dark streaks in the outer part of forewing as follows: an oblique streak on costa before apex, a minute streak at apex, a short streak in cell R_5, long ones in cells M_1 and M_2, a short one in cell M_3, streaks in the fringe oposite cells Cu_1 and Cu_2, barely entering on the wing. Hind wing white, with some fuscous dusting and a diffuse fuscous marginal band. Forewing below brown, irregularly suffused with fuscous; inner margin and a spot on cubital field pale; fringe fuscous with white wedges entering a short distance on the wing. Hind wing beneath white; a subcostal stripe on basal half, an irregular, weak, broken postmedial band, and a narrow diffuse marginal band, all fuscous; fringe white with a weak, broken, fuscous mid-line.

Male Genitalia. Uncus short and somewhat upturned at apex; valve rounded, setose, somewhat expanded at tip; aedoeagus expanded basally and at tip; anellus heavy, spiculate; penis slender, narrow in middle, vesica finely scobinate.

Female Genitalia. Ovipositor with blunt lobes, bearing rather short setae; apophyses rather short, posterior apophyses expanded into triangular plates posteriorly; ductus bursae and bursa membranous and weak.

Types. Holotype of *semiluna*, Cochise Co., Arizona, April 8 (George Franck); lectotype, male, of *bidentalis*, Palmerlee, Arizona (Biedermann); in United States National Museum; lectotype, male, of *microstagma*, Huachuca Mte., Ariz., in United States National Museum.

Life History. Unknown.

Range. Arizona and Mexico.

Material Examined. The types, and 14 specimens from Arizona: Cave Creek, Chiricahua Mts., Aug.; Deer Park, Chiricahua Mts., 8000 ft., Aug.; Madera Canyon, Sta. Rita Mts., Aug.; Paradise, July, Aug.; Sta. Catalina Mts., Aug.; Carr Canyon, Huachuca Mts., Aug.; Maricopa, Pima Co., Oct.

***Edia minutissima* (Smith)**

Figs. 28, 103-105, 185, 225.

Lythrodes minutissima Smith, 1906: 234.
Edia minutissima, Dyar, 1921: 143.
Edia coolidgei Dyar, 1921: 143.

Head cream-coloured, palpi brown on sides; body cream-coloured, abdomen

suffused with brown. Forewing above cream-coloured, largely suffused with orange-brown, and with weak fuscous dusting, concentrated in median and apical areas to form diffuse bands; fringe checkered fuscous and white. Hind wing cream-coloured, with a slightly darker terminal line; fringe cream-coloured at base, the remainder white. Forewing beneath light brown, darkest anteriorly, palest posteriorly; an obscure pale subapical band from costa; fringe as on upper side. Hind wing with under side similar to upper side.

Male Genitalia. Uncus broad and rounded; gnathos broadly triangular; valve expanded and rounded at tip, and with a short triangular process on costa just beyond base.

Female Genitalia. Ovipositor with short, broad, rather sparsely setose lobes; apophyses slender; ductus slender and unmodified; bursa globular and membranous, with a simple, thornlike signum on one side and a bicornuate one on the other.

Types. *E. minutissima* was described from three male syntypes from Yavapai Co., Arizona, May 21, 30, 31. Rindge (1955: 166) cited the May 21 specimen as "type". I consider this tantamount to a lectotype designation, but, in case it should not be so considered, I designate this specimen, now in the American Museum of Natural History, as lectotype. The holotype of *coolidgei*, a female from Palm Springs, Calif., is in the United States National Museum, type No. 24346.

Range. Southern California and Arizona.

Material Examined. Nine specimens, from California: Palm Springs, Riverside Co., Apr., June; Twenty-nine Palms, San Bernardino Co., Apr.; Split Rock Tank, Mojave Desert, May; Providence Mts., May.

Life History. Unknown.

Dichozoma, new genus

Type-species: *Loxostege parvipicta* Barnes and McDunnough.

Frons prominent, bearing a pair of sharp tubercles on a transverse ridge above clypeus and a single median tubercle about half-way between the level of the paired tubercles and that of the antennae; maxillary palpus extending beyond frons, distally dilated with scales; labial palpus very small, porrect, roughly scaled; eye somewhat reduced; ocellus large; gena unscaled; antenna annulated with scales; body slender; hind tarsus longer than tibia. Forewing broad and rounded, outer margin oblique; R_1 from cell at three-fourths from base; R_2 and R_{3+4} stalked half-way from cell to margin; R_5 basally curved and approximated to M_1, well separated from R_{3+4}, the space in the male containing a fovea; discocellular curved and oblique; M_2 and M_3 from lower angle of cell; Cu_1 well separated from M_3, parallel to it; Cu_2 from cell at three-fourths from base; anal loop open; anal area hardly expanded, bearing a weak scale-tuft on inner margin near base. Hind wing with Sc and R anastomosed from cell more than half-way to margin; free portion of radial stalk almost transverse; M_1 in line with radial stalk; discocellular bent at middle, lower portion strongly oblique outward; M_2, M_3, and Cu_1 arising close together from lower angle of cell; Cu_2 from cell at three-fourths from base.

Male Genitalia. Uncus bilobed; tegumen domed; gnathos fairly short and slender, somewhat blunt at tip; vinculum somewhat expanded; anellus tapering; valve rounded, distally fluted; penis slender, straight, tubular.

Female Genitalia. Ovipositor with subquadrate lobes, bearing rather short, sparse setae; posterior apophyses slender and straight, cross-piece hardly expanded; anterior apophyses shorter and broader, weakly bent and somewhat expanded in middle; bursa small and membranous.

Closely allied to *Cymbopteryx*, but differing in the structure of the frons and in the small labial palpus.

***Dichozoma parvipicta* (Barnes and McDunnough), new combination**

Figs. 29, 30, 106-108, 186, 226.

Loxostege parvipicta Barnes and McDunnough, 1918: 161, Pl. XXIII, Fig. 10.

Head and body white; eye black. Forewing very light yellow, with distinct dull-rose markings; antemedial line strong, erect, slightly excurved, expanded at costal and inner margins, joined to base by a stripe along costa; discal spot round; postmedial band strong, regular, almost parallel to outer margin. Hind wing above immaculate white. Under side with markings of upper side repeated but much diffused.

Male and Female Genitalia. As described for the genus.

Type. From Olancha, Inyo Co., Calif., in United States National Museum, ex coll. Barnes.

Range. Southern California and Arizona.

Material Examined. Five specimens, California: Split Rock, San Diego Co., Apr.; Essex, May; Painted Gorge, Imperial Co., Apr.; Arizona: Mohawk. Apr.

Life History. Unknown.

***Cuneifrons*, new genus**

Type-species: *Cuneifrons coloradensis* Munroe

Frons produced dorsally into a slender, transversely wedge-shaped process, shallowly grooved dorsally and weakly indented in front; labial palpus porrect, hardly exceeding frontal process, third joint weakly decurved, whole palpus conically scaled, third segment short and hidden; maxillary palpus fairly prominent, squamous, not dilated with scales; gena angularly expanded in front of eye, but not forming a broad, toothed flange; male antenna filiform, strongly ciliated; proboscis moderately developed; eye large; body slender, smoothly scaled; legs robust, without unusual modification. Forewing broadly triangular, apex subacute, outer margin oblique, somewhat curved; costal area broad; R_1 from well before end of cell; R_2 from anterior angle, closely approximated to R_{3+4} for a short distance then abruptly diverging from it; free parts of R_3 and R_4 longer than their stalk; cell short and truncate, discocellular only very weakly oblique; R_5 from distinctly behind anterior angle, M_1 from close to R_5; M_2 from posterior angle to cell; M_3 from a little before posterior angle, weakly deflected towards M_2 basally; Cu_1 from well basad of M_3, but weakly deflected towards it in basal part; Cu_2 from cell at three-fourths; 3rd anal free. Hind wing with Sc and R_s briefly anastomosed; discocellular angulate in middle, posterior part oblique; M_2, M_3 and Cu_1 grouped around posterior angle of cell, not approximated; Cu_2 from cell at three-fourths. Three anals present.

Male Genitalia. Uncus broad, bilobed, with rounded, setose sides; gnathos broadly triangular; tegumen weakly domed; vinculum rather wide; juxta bivalved, joining a tapering, denticulated anellus; valve rather small, unsymmetrical, fluted, with a subcostal supporting carina; penis tubular, slightly bent and bulbous basally.

***Cuneifrons coloradensis*, new species**

Figs. 31, 109-111, 187.

Head, antenna and palpi light greyish green, labial palpus weakly infuscated on side; eye dark brown; thorax above light greyish green; abdomen above dark fuscous, tipped with yellowish buff; body beneath light greyish green; legs light greyish green, tarsi infuscated beneath distally. Forewing above, including fringe, uniformly light greyish green, a faint trace of a dark discocellular dot. Hind wing above whitish grey; fringe white, with a faint grey line at extreme base. Forewing beneath light fuscous; costa and fringe light greyish green; hind wing beneath as above. Expanse 15 mm.

Male Genitalia. As described for the genus.

Holotype, male, Moffat Co., Col., June 22-30, C.M.Acc.13019. Type lot No. 137, Carnegie Museum.

Life History. Unknown.

Gyros Henry Edwards

Type-species: *Oribates muirii* Henry Edwards, *vide infra.*

Oribates Henry Edwards, 1881: 22, not Dugès, 1834.

Gyros Henry Edwards, 1881: 117.

Monocona Warren, 1892: 174. Type-species *M. rubralis* Warren, by monotypy and original designation.

Gyros, Smith, 1893: 315.

Gyros, Hampson, 1900: 509.

Frons produced, ending in an acute vertical wedge; labial palpus rather short, obliquely ascending, third joint exposed; maxillary palpus ending in a tuft of scales; eye reduced; gena unscaled; antenna rather stout; body robust; legs robust, smoothly scaled. Forewing broad; outer margin rounded; anal area expanded but without a definite tuft; R_1 from before angle of cell; R_2 and R_{3+4} from upper angle; R_5 and M_1 arising close together below upper angle; discocellular oblique; M_2 and M_3 from angle of cell; Cu_1 somewhat removed from M_3; Cu_2 from cell at four-fifths from base; 3rd A free. Hind wing with cell very short; Sc and R_1 anastomosed for about half distance from cell to margin; R_s and M_1 in line; discocellular angled at middle, the lower sector strongly oblique outward; end of cell at about middle of wing; M_2, M_3, Cu_1 and Cu_2 clustered closely about lower angle.

Male Genitalia. Uncus triangular, strongly bilobed; gnathos broad basally, then parallel-sided, then abruptly tapering to a point; valve fairly long and narrow, faintly spatulate; an oblique ridge from upper articulation to middle of distal part of valve; juxta consisting of two curved and converging rods; vinculum with a short, posteriorly directed process; penis slender, with a long, narrow, weak cornutus.

Female Genitalia. Ovipositor with broad, flat, hardly separated, sparsely setose lobes; cross-bar of posterior apophysis lamellar; bursa globular, membranous.

The name *Oribates* Hy. Edwards, 1881, was proposed for two species, *muirii* Hy. Edwards and *limbatus* Hy. Edwards. It is preoccupied by *Oribates* Dugès, 1934. Later, Hy. Edwards (1881a) proposed the substitute name *Gyros*, including *muirii*, *limbatus* and two other species, but stating, "With the exception of *G. Muirii*, the genus is an extremely homogeneous one, but I am inclined to think that *Muirii* differs in generic characters, and that it ought, perhaps to form the type of another genus." He did not actually remove it, however, or explicitly select a type species for *Oribates* and *Gyros*, and his statement has been ignored by subsequent authors. Smith (1893) listed only *muirii* in *Gyros*, removing *limbatus* to *Tripudia* Grote. Hampson (1900), noted the synonymy of *Gyros muirii* and *Monocona rubralis* Warren and stated that the species was a pyrale. This synonymy was missed by Fernald (1902), but was cited by Barnes and McDunnough (1914), who used *Gyros* in Pyralidae. There does not seem to be any type designation for *Gyros* or *Orbitaes*, and accordingly I select *O. muirii* as the type species of *Oribates; O. muirii* consequently becomes the type species of *Gyros*, despite the doubtful inclusion of this species by Hy. Edwards. This result is in harmony with all usage subsequent to Hy. Edwards (1881a).

Key to the Species

1. Hind wing brick red 2
   Hind wing black ..... *atripennalis* Barnes and McDunnough
2. Antemedial line of forewing slightly excurved ..... *muirii* Hy. Edwards
   Antemedial line of forewing angled inward ..... *powelli* Munroe

Gyros muirii (Hy. Edwards)

Figs. 32, 112-114, 188, 227.

Oribates muirii Henry Edwards, 1881: 22.
Gyros muirii, Henry Edwards, 1881a: 117.
Monocona rubralis Warren, 1892: 174.
Gyros muirii, Hampson, 1900: 509.
Gyros muiri, Barnes and McDunnough, 1914: 214.

Forewing above with basal half dark cinnamon-brown, distal half much paler, the basal area followed by a narrow pale zone; an oblique, black, discocellular bar; a narrow, brown, postmedial line almost parallel to margin; terminal line black; fringe dark brown. Hind wing above brick-red, with strong, black, terminal line and dark-brown fringe. Forewing beneath brick-red, with yellow suffusion on disc and whitish suffusion on inner margin; an oblique, black, discocellular bar as above; termen and fringe as above; hind wing as above. Expanse 14 to 16 mm.

Male Genitalia. Uncus triangular, strongly bilobed; gnathos broad basally, then parallel-sided, finally tapering abruptly to a point; valve fairly long and narrow, weakly spatulate; an oblique ridge from upper articulation to middle of distal part of valve; juxta consisting of two curved and converging rods; vinculum with a short, posteriorly directed process; penis slender, with a long, narrow, weak cornutus.

Female Genitalia. Ovipositor with broad, flat, hardly distinct, sparsely setose lobes; posterior apophysis slender but well sclerotized, a little thickened anteriorly, cross-bar expanded into a flat plate of irregular shape; anterior apophysis bent and triangularly expanded in middle; ductus short and narrow, bursa globular, membranous.

Types. Of *muirii*, three male, two female syntypes, Tuolumne Co., Calif., Jno. Muir, location unknown, see note by Klots (1942: 421); of *rubralis*, lectotype, female (present designation) "California", ex Grote collection, in British Museum (Natural History). This specimen bore the handwritten label "*Oribates Muirii* Hy. Edw." wrongly transcribed by Warren.

Range. Northern and central California; southern Oregon.

Material Examined. Ten specimens from California: Mt. Diabolo, Apr.; Lassen Peak Trail, Shasta Co., July; Mt. Lassen, 8000 ft., July; Echo Lake, Shasta Co., July; Mts. back of Alma?; Oregon: Crater Lake, 4000 ft., July, Aug.

Life History. Unknown.

Gyros atripennalis Barnes and McDunnough

Gyros atripennalis Barnes and McDunnough, 1914: 235, Pl. 1, Fig. 12.

"Palpi head and thorax covered with long greenish white hairs, fore and mid-legs white, hind legs black; primaries blackish with a considerable deep purplish-red tinge; basal half of wing defined outwardly (at times quie prominently) by a curved dark t.a. line just beyond which a black dash from cell represents the reniform; t.p. line blackish, very close to outer margin with which it is practically parallel; the spaces between these two lines sprinkled with white scales, often quite heavily; fringes blackish, slightly ochreous at tips. Secondaries with underside deep-black; abdomen black, at times with posteior half tinged with reddish. Expanse 13 mm.

"*Habitat*. Mineral King, Tulare Co., Calif. (10,000 ft.) (Pilate). 6♂, 5♀. Types, Coll. Barnes.

"This may be a variety of *muirii* Hy. Edw. (*rubralis* Warr.) of which we possess a long series from the type locality, Truckee, Calif.; two specimens of the new species show a distinct reddening of the secondaries both above and below without however approaching the bright color of *muiri*. The t.p. line of

atripennalis appears to be closer to the outer margin and more evenly curved than in *muiri*, so for the present we prefer to regard it as a distinct species."

I have little to add to the original description, quoted above; the species has so far as I know not been collected since the discovery of the type lot. I have not seen anything intermediate from other localities. I select a male in the United States Museum from Mineral King, Tulare Co., Calif., July 8-15, labelled, "*Gyros atripennalis* B. & McD., Type ♂," as lectotype.

Gyros powelli Munroe

Figs. 33, 189.

Gyros powelli Munroe, 1959: 726, Figs. 3, 4.

Structure and facies as in *G. muirii* Hy. Edwards. Head and palpi roughly scaled, creamy buff, with considerable admixture of black scales and hairs; thorax and base of abdomen above black with considerable creamy-buff scaling; distal part of abdomen orange-buff; body beneath and legs largely creamy buff. Forewing with costa almost straight, outer margin broadly rounded; hind wing rounded. Forewing above light buff, suffused to a varying degree with red and overlaid with diaphanous white scales; basal area suffused with deep vinous red or purplish fuscous, lightly overlaid with white scales; limit of basal area oblique, extending from costa at one-third to inner margin beyond middle; an oval, blackish-fuscous discocellular spot, surrounded by intensified red scaling; postmedial line blackish fuscous, interrupted or obsolescent, close to and almost parallel to outer margin; terminal line blackish fuscous; fringe fuscous, darker in basal half, whitish buff at extreme outer edge. Hind wing brick red, terminal line and fringe as on forewing. Fore and hind wings beneath yellowish buff, with some reddish suffusion at base and along costa; terminal line and fringe as above. Expanse 10 to 13 mm.

Male Genitalia. Uncus bilobed, laterally setose; tegumen normal; gnathos pointed; juxta ovate; vinculum narrow, dorsally carinate; valve distally slightly expanded, with a subcostal strengthening flange on basal half; penis cylindrical, somewhat attenuated in middle, apparently with a slender, weakly sclerotized cornutus.

Female Genitalia. Not studied.

Types. Holotype, male, allotype, female, and 28 paratypes, La Grulla, Lower California, 6500 ft. Holotype, allotype and a series of paratypes in the California Academy of Sciences, San Francisco; a series of paratypes in collection of University of California, Berkeley; a series of paratypes in C.N.C., type No. 6819.

Range. Southern California and Lower California.

Material Examined. In addition to the type series, two specimens from the following localities in California, seen through the courtesy of Mr. J. A. Powell: Short Canyon, 6 mi. N. of Inyokern, Mar. 15, 1955 (M. Wasbauer); Lockwood Cr., near Stauffer P.O., Ventura Co., May 7, 1959 (J. Powell).

Life History. Unknown.

Remarks. This species is closely related to *G. muirii;* however, the much more restricted basal patch, with its differently shaped outer border, indicates specific status. The average size is smaller in the present species, the ground colour of the forewing is much more pallid, and that of the hind wing is lighter red. The differences in genitalia are perhaps not significant, but large genitalic differences between related species are not necessarily to be expected in this subfamily. The California specimens now available agree perfectly with the type series from Lower California, and show no sign of intergradation with *G. muirii.*

Anatralata, new genus

Type-species: *Aporodes versicolor* Warren

Antenna filiform in both sexes, briefly pilose below. Frons broad, weakly protruding; eye reduced, surrounded by an unscaled zone; ocellus normal. Labial palpus porrect, long-scaled, third joint hidden in scaling of second; maxillary palpus fairly prominent, bearing a slender tuft of scales; legs robust. Forewing broad; costal area broad; R_1 from well before apex of cell; R_2 from just before R_{3+4}; R_5 not approximated to R_{3+4}; M_1 well separated from R_5; M_2 and M_3 from end of cell, not approximated in basal parts; Cu_1 from just before end of cell; Cu_2 from a little before Cu_1; anal area somewhat expanded; anal loop large and complete. Hind wing broadly rounded; Sc and R_1 briefly anastomosed; M_1 not stalked with R_5; lower limb of discocellular strongly oblique; M_2 and M_3 approximated or stalked; Cu_1 from angle of cell, not approximated to M_3; Cu_2 from a little before angle of cell.

Male Genitalia. Uncus broad and rounded, decurved and setose at sides, weakly sclerotized in middle; tegumen humped; gnathos subtriangular, pointed; juxta narrow; vinculum narrow; valve short and rounded, ventral margin somewhat sinuate, base with a strengthening ridge before middle; penis short, cylindrical, narrowed near base.

Female Genitalia. Ovipositor with subquadrate, weakly setose lobes; apophyses slender; posterior apophysis with cross-piece plate-like; bursa membranous, pyriform, expanding gradually from the ductus; signum consisting of a small group of spines.

Anatralata versicolor (Warren), new combination

Figs. 34-36, 115-117, 190, 228.

Aporodes versicolor Warren, 1892: 175.
Pyrausta versicolor, Hampson, 1899: 269.

Frons shining black; vertex black with an admixture of greenish-white scales; palpi black, labial palpus white at base beneath; antenna and base of proboscis black; thorax and abdomen above and beneath and legs black, with a variable admixture of greenish-white scales. Forewing above black, strongly overlaid with dark vinous red; broad basal and postmedial areas of greenish-white dusting; fringe blackish fuscous, often tipped with white. Hind wing above uniformly blackish fuscous, fringe blackish fuscous, usually tipped with white. Wings beneath uniformly dark grey, with some greenish-white dusting, especially along costa of forewing; fringes as above. Expanse 10 to 13 mm.

Genitalia. As described for the genus.

Type. Lectotype, male, Washington Territory. In British Museum (Natural History).

Material Examined. Seventeen specimens from: British Columbia: Garnett Valley, Summerland; Shingle Creek Road, Keremeos; Lihumption Park, near Cultus Lake, 8000 ft.; Mt. Revelstoke, 6200 ft.; Washington: Peggy Dew Trail, Okanogan Co.; Idaho: Lewiston; California: Truckee; Placer Co.; Hat Creek, Shasta Co.; Tahoe Valley, Lake Tahoe, Eldorado Co., 6300 ft.; Gavilan Hills, Riverside Co.

Life History. Unknown.

Remarks. There is considerable individual variation in the amount of red and of white suffusion and particularly in the amount of white in the fringes. There is partial geographic correlation in this variation, northern specimens tending to have more white than southern ones. More material is required to assess the geographic components of variation.

Metaxmeste Hübner

Type-species: *Pyralis phrygialis* Hübner, by subsequent designation, Munroe (1954)

Metaxmeste Hübner [1825]: 352.

Frons (Figs. 118-120) flat and oblique; vertex short; eye reduced, bordered by an unscaled zone ventrally, anteriorly and dorsally; labial palpus porrect, third segment somewhat decumbent, not concealed by the long bushy scaling of the second; maxillary palpus short, not dilated with scales distally; antenna stout, with short segments, densely covered with very short pile below; body robust, clothed with long hair below; praecinctorium narrow and short, with a transverse, scaled lobe distally; legs robust and hairy, spurs subequal. Wings broad and rounded. Forewing with costa strongly arched at base, then straight or weakly incurved; costal area broad, Sc well separated from R, R_1 from cell at four-fifths, R_2 from just before apex of cell; R_3 and R_4 stalked about half-way from cell to apex, stalk from apex to cell; R_5 curved, but not closely approximated to R_{3+4} at base, arising just behind apex of cell; M_1 from slightly behind R_5; discocellular weakly oblique distad and faintly curved; M_2 from distinctly before posterior angle of cell; M_3 from posterior angle; Cu_1 well separated fom M_3, cu-m crossvein at a distinct angle to Cu_1; Cu_2 from cell at three-fourths; 2nd A straight, ending at outer margin. Hind wing with Sc touching but not anastomosed with R_1; M_1 not stalked with R_s; discocellular incurved in middle, lower limb oblique outward; M_2, M_3 and Cu_1 narrowly separated around posterior angle of cell; Cu_2 from cell at three-fourths; three anals present.

Male Genitalia. Uncus trapezoidal, bilobed, laterally setose; gnathos trigonate or clavate, with some dorsal spinules; tegumen weakly domed; juxta bilobed, extended into an anellus; valve ovate, weakly fluted distally; penis straight or curved, with a slender cornutus.

Female Genitalia (Fig. 229). Ovipositor short and truncate, with poorly defined lobes; apophyses slender; posterior apophysis with a plate-like terminal expansion; anterior apophysis slightly curved, with a triangular expansion near posterior end; bursa membranous, ductus with a narrow, sclerotized collar.

Metaxmeste nubicola Munroe

Figs. 39, 118-120, 191.

Mextaxmeste nubicola Munroe, 1954: 499, Figs. 1, 2.

Robust, hairy, with wings rounded, costa of forewing highly arched just beyond base. Head, body, and upper side of wings dark silky grey, hind wing somewhat duller than fore wing. Forewing above with reniform and orbicular spots and transverse posterior line faintly indicated as slightly paler markings. Hind wing above with costal area a little paler than the rest. Both wings beneath light grey suffused with darker in and behind the cell. Forewing with reniform and regularly curved subterminal, both markings dark and rather obscure. Both wings above and beneath with a dark terminal line followed by a long paler fringe.

Male Genitalia. Uncus trapezoidal, bilobed, laterally sparsely setose; tegumen weakly domed; gnathos triangular basally, clavate and dorsally spinulose distally; vinculum broad and flat; juxta prolonged into a tubular anellus; valve ovate, with a prominant subcostal carina and weak distal fluting; penis almost straight, with a short cornutus.

Female Genitalia. Not examined.

Type. Holotype, male, and allotype, female, Hall Valley, Park Co., Colo., "Arctic Alpine zone 'tundra' ", altitude 11,500-12,500 feet, 13-15 July, 1935, collector A. B. Klots. Types ex coll. A. B. Klots in the American Museum of Natural History.

Life History. Unknown.

Remarks. This species differs in maculation from *M. phrygialis* in the darker fringe of the hind wing, in the more extensive and less definitely margined dark suffusion of the forewing beneath, and in lacking the transverse posterior line of the hind wing beneath. The frons is more prominent and oblique than in *phrygialis*. The male genitalia differ from those of *phrygialis* in having the valve broader, with a much stronger subcostal fold, and in having the gnathos shorter, with the distal part less strongly tapered than the basal part.

Pogonogenys, new genus

Type-species: *Titanio proximalis* Fernald

Antenna filiform in both sexes; frons produced in a horizontal wedge, somewhat domed above; eye reduced, but not surrounded by a scaleless zone; gena broad and scaled; ocellus large; labial palpus porrect, long-scaled below; third joint hidden in vestiture of second; maxillary palpus small but exposed and conspicuous, ending in a strong tuft; proboscis well developed. Body stout; legs rather long, coxae with fine lanose vestiture, tibial spurs long, male with outer spurs about two-thirds length of inner; praecinctorium elongate; keel-like, distally thickened and scaled. Forewing with anterior margin nearly straight, slightly arched at base; apex and tornus narrowly rounded; outer margin weakly rounded, slightly oblique; costal area of moderate width; R_1 from cell at four-fifths; R_2 from very close to apex of cell, basally approximated to R_{3+4}; R_3 and R_4 stalked a little more than halfway from cell to apex, R_4 terminating costad of apex; R_5 from end of cell a little behind R_{3+4}, M_1 from well behind R_5, both nearly straight, R_5 not approximated to R_{3+4}; discocellular curved, posteriorly oblique; M_2 from a little before posterior angle of cell; M_3 from angle; Cu_1 from behind angle, well separated from M_3 but deflected towards it in basal part; cross-vein m-cu at an angle to Cu_1; Cu_2 from cell at two-thirds; 2nd A straight, ending at outer margin near tornus; 3rd A short, free. Hind wing with anal angle somewhat elongate; $Sc+R_1$ strongly anastomosed with R_s; R_s and M_1 stalked; cell short; discocellular strongly curved, anteriorly erect, posteriorly strongly oblique; M_2 and M_3 from posterior angle of cell, Cu_1 from distinctly before it, M_2, M_3 and Cu_1 weakly approximated basally; Cu_2 from cell at three-fourths; three anals present.

Male Genitalia. Uncus bilobed; gnathos rod-like and robust; anellus tubular; tegumen of moderate width, not domed; vinculum fairly wide, medially expanded; penis somewhat curved, with a robust cornutus; valve distally rounded, radially fluted.

Female Genitalia. Ovipositor with rounded, somewhat sclerotized, sparsely setose lobes, rimmed with a conspicuous row of setae or clothed with setae with specialized bases; apophyses slender, cross-piece of posterior apophysis flattened and plate-like; ductus bursae convoluted, bursa membranous with one or two indented signa.

Three species are known, all from the western U.S.A.

Key to species of *Pogonogenys*

1. Hind wing red, or exceptionally orange-yellow ..... *proximalis* Fernald
   Hind wing grey or brown 2
2. Hind wing warm brown, expanse about 16 mm. ..... *frechini*, n.sp.
   Hind wing grey, expanse about 11 mm. ..... *masoni*, n.sp.

Pogonogenys proximalis (Fernald), new combination

Figs. 37, 121-123, 192, 230.

Titanio proximalis Fernald, 1894: 256.

Head, thorax and abdomen above and abdomen beneath with mixed black, buff, and light-grey scales, general aspect dark grey; palpi light grey, with some

black scales; thorax beneath silvery grey; legs silvery grey, with black bands and with some buff scaling dorsally. Forewing above dark grey, suffused with light grey or buff, narrowly along antemedial line, and broadly along postmedial line; antemedial line narrow, blackish fuscous, obscure, oblique outward from costa at two-fifths to posterior margin of cell, thence erect to Cu_2, strongly retracted behind cell, abruptly angled and weakly oblique outward to inner margin at two-fifths; a narrow, obscure blackish-fuscous discocellular bar; postmedial line dark fuscous, broken into weakly sagittate spots on the veins, the line erect from costa to R_5, weakly excurved around cell, shallowly retracted and twice indented behind it, then oblique outward to inner margin a little before tornus; an obscure subterminal shade, parallel to outer margin for most of its length, posteriorly bent outward to tornus; a broken dark-fuscous terminal line; fringe dull brown. Hind wing above light red, paler on costa; a narrow black terminal band; a black dot just before it on Cu_2; fringe dark fuscous with a brown line in middle and a buff terminal line. Fore and hind wings beneath light red, each with a blackish-fuscous terminal line from apex to Cu_2; forewing with a blackish-fuscous discocellular bar and with inner marginal area whitish grey; fringes brown, with a fuscous mid-line. Expanse 23 to 24 mm.

Male Genitalia. Uncus bilobed, almost truncate distally, sides only weakly diverging, strongly setose; gnathos rod-like, dorsally denticulate; tegumen weakly humped; vinculum with a triangular dorsal projection; juxta bilobed, a process from the outer angle of each lobe abutting on the conical anellus; valve ovate, strongly fluted distally, with a subcostal supporting carina; sacculus somewhat inflated; penis with a large, curved cornutus.

Female Genitalia. Ovipositor with lobes rounded, somewhat sclerotized, margined with an irregular row of setae, otherwise with few, sparse, inconspicuous setae; apophyses slender, cross-piece of posterior apophysis flat and plate-like; ductus bursae with a narrow sclerotized collar, then broadened, convoluted and membranous; bursa membranous, with a pair of plate-like, denticulated signa, each with a hemispherical central depression.

Types. Three syntypes, San Bernardino Co., Calif. I select a female in the United States National Museum, labelled, "S. Bernardino Co., through C. V. Riley's *Titanio proximalis* Fern. *Type*, Type No. 368, United States National Museum," as lectotype. Another probable syntype, labelled "Argus Mts." is not conspecific, but belongs to a species of *Loxostege*.

Range. Southern California.

Material Examined. Twenty-eight specimens from California: Inyo Co.; Short Canyon, 6 mi. N. of Inyokern; New York Mts., S. Bernardino Co.; Yermo, San Bernardino Co.; Old Woman Springs, Riverside Co.; Apple Valley; Split Rock Tank, Mojave Desert; near Phelan, Mojave Desert.

Life History. Unknown.

Pogonogenys frechini, new species

Figs. 38, 193, 231.

Head, thorax and abdomen above and abdomen below clothed with mixed black and buff scales, general tone dark fuscous; labial palpus light buff below, with some grey and fuscous scales; thorax below and legs light buff, the latter with considerable fuscous scaling, partly arranged in obscure bands. Forewing above with mixed light-grey, tan and brownish-fuscous vestiture, general effect greyish brown variegated with light grey; basal area mainly dark; discal area extensively powdered with light grey; a dark discocellular bar; postmedial line obscure, dark, erect from costa to M_2, very weakly excurved opposite cell, strongly retracted

behind it, then oblique outward to inner margin just before tornus; a weak, pale, subterminal line; fringe brownish fuscous, paler in basal half. Hind wing above warm brown, becoming greyish towards costa, heavily dusted with fuscous, especially on anal and terminal areas and beyond end of cell; fringe light fuscous, with a darker sub-basal line. Wings beneath almost uniformly brown; a weak dark discocellular spot on forewing. Expanse 16 mm.

Male Genitalia. Uncus fairly narrow, bilobed, nearly parallel-sided; gnathos long and robust, rod-like; anellus tubular, moderately sclerotized; tegumen not domed, but moderately wide; vinculum fairly wide, medially expanded; penis somewhat curved, containing a stout, curved cornutus, rounded and expanded distally, basally expanded and truncated in a longitudinal plane; valve expanded, distally rounded and radially fluted; a strengthening ridge behind costa and a broad fold along dorsal margin of sacculus.

Female Genitalia. Ovipositor with lobes broadly rounded, rather strongly sclerotized; a row of specialized peg-like setae near margin, sparse, fine, short setae elsewhere on surface; apophyses slender, rod-like; cross-piece of posterior apophysis flattened, plate-like; ductus bursae membranous, pleated, convoluted; bursa membranous, bearing a pair of thorn-like signa, each on a sclerotized base.

Holotype, male, allotype, female, and one male paratype, Vantage, Wash., November 4, 1942, E. C. Johnston. Type No. 6965, C.N.C.

Life History. Unknown.

Pogonogenys masoni, new species

Figs. 169, 232.

Frons blackish fuscous, bordered laterally and posteriorly with creamy grey; vertex fuscous in middle, creamy behind; antenna dull grey; gena and occiput fully scaled, creamy grey; eye reduced; ocellus prominent; palpi brownish, with long, creamy scaling; proboscis creamy at base; body above dull brownish grey; body beneath and legs creamy grey, femora black above, a black patch on anterior surface of front coxa. Forewing above dull grey, with pale greenish-grey overscaling; an erect, blackish, antemedial line, excurved in cell, angled inward on 2nd A; dull grey suffusion along costa; a large, dull-grey, reniform spot from costal stripe to postmedial line; postmedial line obscure, blackish fuscous, rather near to termen, broadly excurved from costa, approaching outer margin more closely near tornus; fringe long, especially towards tornus, brownish fuscous. Hind wing above dull grey, broadly infuscated towards termen; fringe brownish fuscous basally, pale grey distally. Wings beneath grey, immaculate, hind wing somewhat paler than forewing. Expanse 11 mm.

Male Genitalia. Not studied.

Female Genitalia. Ovipositor with elongate, semiovate lobes, bearing short setae with large, annular bases; apophyses long and slender; posterior apophysis tapering to meet a diffuse, ovate sclerotization; ductus and bursa delicate, membranous, the latter bearing a thorn-like signum.

Holotype, female, White Water, Calif., March 3, 1955, W.R.M. Mason. Type No. 7136, C.N.C.

The species is much smaller than others of its genus, and superficially resembles *Psammobotys fordi*, from which it is immediately distinguishable by the reduced eye and scaled gena.

Life History. Unknown.

Chrismania Barnes and McDunnough

Type-species: *Chrismania pictipennalis* Barnes and McDunnough, by original designation and monotypy

Chrismania Barnes and McDunnough, 1914: 239.

Frons prominent, truncate or somewhat depressed anteriorly, antero-ventral angles produced; eye reduced; gena scaled in fresh specimens; labial palpus obliquely upturned, first and second joint fringed below with long scales, third joint cylindrical and somewhat more porrect than the first two; maxillary palpus filiform, not reaching anterior edge of frons; proboscis well developed; antenna filiform; body stout; legs robust; mid-tibia fringed with hair. Forewing with costa straight, apex rounded, outer margin curved, tornus broadly rounded, anal region expanded but without a tuft of scales; cell of moderate length; R_1 from well before angle; R_2 from near angle, distinctly separated from R_{3+4} at base; stalk of R_{3+4} short; R_5 from below angle of cell, not approximated to R_{3+4} at base; M_1 from well below R_5; discocellulars vertical anteriorly, bending gradually distad posteriorly; M_2 and M_3 distinctly separated; Cu_1 from somewhat before lower angle of cell; Cu_2 from cell at three-fourths. Hind wing rounded; Sc and R_s briefly anastomosed; R_s and M_1 stalked; discocellular incurved, the lower limb strongly oblique; M_2 and M_3 basally approximated or briefly stalked; Cu_1 from just before angle of cell, not approximated to M_3; Cu_2 from cell at five-sixths.

Male Genitalia. Tegumen elevated; uncus somewhat elongate, bluntly bilobed at tip; gnathos broadly triangular, tapering to a sharp, upturned apex; juxta narrow and slender; penis cylindrical, thinner in middle than at ends; valve subovate, radially fluted, with a weak carina behind costa.

Female Genitalia. Ovipositor lobe elongate, basally strongly sclerotized, distally membranous and weakly setose; posterior apophysis long, slender, well sclerotized; ninth segment well sclerotized, anterior apophysis slender, well sclerotized; bursa small, globular, membranous; ductus bursae long, slender, with a short, sclerotized collar near ostium.

This genus belongs to the *Tegostoma* complex, so well developed in the Old World. The single species occurs in southern California and Arizona.

Chrismania pictipennalis Barnes and McDunnough

Figs. 40, 124-126, 194, 233.

Chrismania pictipennalis Barnes and McDunnough, 1914: 240, Pl. I, Fig. 20.

Head and body above with a mixture of dark-fuscous, tawny, and pale-buff scales; general effect olivaceous-brown; labial palpus pale greyish buff, black at tip; body beneath and legs light grey, in places with a yellowish tinge. Forewing above light buff, suffused to a varying degree with dull brown, especially in basal and terminal areas; antemedial line dull brown, looped distad in cell, retracted on Cu, then more strongly looped outward and again retracted, finally oblique distad to inner margin; a small orbicular spot, sometimes obsolete, and a moderately large reniform, both solid, dull brown; postmedial line dull brown, excurved from costa, weakly retracted behind cell, obtusely angled outward on 2nd A; an obscure, broken terminal line; fringe pale buff. Hind wing above uniformly light orange, fringe pale buff. Forewing beneath immaculate, light ochreous, fading to pale buff along inner margin; hind wing beneath uniformly light orange. Expanse 19 to 21 mm.

Genitalia. As described for the genus.

Type. Holotype, male, Redington, Arizona, in United States National Museum.

Range. Arizona and Southern California; common on the Mojave Desert and probably elsewhere in the Southwest.

Material Examined. Thirty-five specimens from California: Mirage Lake; Borego; Llano; Lovejoy Buttes, Los Angeles Co.; Palmdale; Hinkley, San Bernardino Co.; White Water; Kingston Mts., San Bernardino Co.; Ibanpah Mts., San Bernardino Co.

Life History. Unknown; the greasiness of the adult suggests that the larva is a borer.

Plumipalpia, new genus

Type-species: *Plumipalpia martini*, new species

Frons prominent, rounded, roughly scaled; eye somewhat reduced; antenna filiform; labial palpus porrect, plumose; maxillary palpus bushy; proboscis rudimentary; body robust; legs of moderate size. Forewing narrowly oval, apex rounded, outer margin strongly oblique, curving gradually to inner margin; R_1 from well before angle of cell; R_2 from angle; R_3 and R_4 long-stalked; R_5 from just below angle of cell, not approximated to R_{3+4}; M_1 from middle of discocellulars; discocellulars weakly curved; M_2 and M_3 from lower angle of cell, not approximated in their basal parts; Cu_1 from well before lower angle; Cu_2 from cell at about three-fourths; M_2 to Cu_2 all strongly oblique, Cu_2 and 2nd A strongly convergent distally. Hind wing narrow, outer margin weakly excised in middle; Sc and R_1 strongly anastomosed; M_1 briefly stalked with R_{4+5}; cell phenomenally short; M_2 and M_3 lost; Cu_1 from lower angle of cell; Cu_2 from a little before it; three anals present.

Male Genitalia. Uncus broad, ovate, weakly indented distally, sides rolled under and setose; gnathos narrowed, distally clavate; tegumen with a small hump; juxta bilobed, joining a tubular anellus; valve ovate, strongly fluted; penis short, conical, unarmed.

Female. Unknown.

Range. Mojave Desert, California.

Plumipalpia martini, new species

Figs. 41, 127-129, 195.

Head and body dark greyish fuscous, with some light-grey scales; legs with mixed dark-grey scales. Forewing above: basal area dark fuscous, its outer boundary oblique from costa at one-third to inner margin beyond middle; disc light grey with some yellowish and fuscous scales; a diffuse fuscous discocellular spot; terminal area fuscous, with an obscure, grey, subapical crescent; fringe fuscous. Hind wing above with costal part greyish white, thinly scaled; posterior half dark fuscous; fringe white, infuscated towards apex. Under surface with markings of upper surface weakly repeated, but with pale scaling more extensive. Expanse 10 mm.

Genitalia as described for the genus.

Holotype, male, and one male paratype, Dove Springs, Mojave Desert, Kern Co., Calif., 3000 ft., "2-10-46", flushed from ground during day. Holotype in Los Angeles County Museum; Paratype No. 6966, C.N.C.

I take pleasure in naming this remarkable species for Mr. Lloyd M. Martin, who has made so many interesting discoveries in the fauna of the Southwest.

Nannobotys, new genus

Type-species: *Botis commortalis* Grote

Frons prominent, somewhat rounded, broad; eye reduced; ocellus large; a scaleless space between eye and ocellus; gena naked; labial palpus smoothly scaled, porrect, third joint drooping slightly; proboscis well developed; antenna filiform; body robust; legs strong, outer spurs nearly as long as inner; praecinctorium large, prominent, longitudinal, with paired scale-rows along its ventral margin. Fore-

wing with costa straight, outer margin rounded, inner margin without tuft; R_1 from a little before upper angle of cell; R_2 from upper angle, closely approximated in its basal part to the long stalk of R_3 and R_4; R_5 not approximated to R_{3+4} at base; M_1 from discocellulars well above middle; discocellulars weakly excurved in their lower part; M_2 from a little above angle of cell, M_3 from angle, not approximated to M_2; Cu_1 a little farther from M_3 than M_3 from M_2; Cu_2 from well before end of cell; anal loop developed. Hind wing with Sc briefly or moderately anastomosed with R_s; discocellular strongly oblique in lower part; M_2 lacking; M_3 and Cu_1 from angle of cell; Cu_2 from a little before angle; three anals present.

Male Genitalia. Uncus bluntly bilobed; gnathos strong, trough-shaped basally, flattened and rounded distally; tegumen humped; vinculum narrow; anellus prolonged into a bilobed sheath surrounding penis; valve rounded, costa strongly curved, fluting weak, a weak subventral sclerotization; penis strongly bent at about the basal third, ductus ejaculatorius entering at about same point; aedoeagus tapered to a slender tip.

Female Genitalia. Ovipositor minute, sharp; apophyses slender and straight, but strongly sclerotized.

Only the type species is known.

Range. Desert regions of the Western U.S.A.

Related to *Noctueliopsis*, but differing in the absence of M_2 of the hind wing.

Nannobotys commortalis (Grote), new combination

Figs. 42-44, 130-132, 196, 234.

Botis commortalis Grote, 1881a: 233.
Pyrausta commortalis, Hampson, 1899: 269.
Noctuelia commortalis, Fernald, 1902: 393.
Noctuelia minima Dyar, 1917a: 132.

Frons dark grey, bordered laterally with white; palpi grey above, labial palpus white beneath; proboscis white-scaled at base; thorax and abdomen dark grey above, with some pale-grey scales, shading to white beneath; legs white. Forewing above grey with a slight brownish or olivaceous tint; a curved, black antemedial line at one-third, followed by a diffuse greyish-white band; a slight darkening of ground colour over discocellulars; a very weakly sinuous, black, postmedial line, almost parallel to outer margin and preceded by a diffuse greyish-white band; fringe white, with a dark line at its base. Hind wing above white in male, greyish fuscous in female, with white fringe. Forewing beneath fuscous, fringe and sometimes costal margin white; hind wing beneath white in male, fuscous with white fringe in female. Expanse 9 mm.

Male and Female Genitalia. As described for the genus.

Types. Of *commortalis*, holotype, Havilah, Calif., Edwards, in British Museum (Natural History); of *minima*, holotype, male, Pasadena, Calif., April 30, 1909 (F. Grinnel, Jr.), No. 21549, in United States National Museum.

Range. California to Washington.

Material Examined. Sixty-five specimens from: California: White Water; Llano; Morongo Valley; Borego; Washington: Satus Creek, Yakima Co.

Life History. Unknown.

This species is characteristic of desert areas, where it is often abundant. Members of the 1955 survey party from the Canada Department of Agriculture found it very numerous in the daytime on composite flowers at White Water, California.

Porphyrorhegma, new genus

Type-species: *Porphyrorhegma fortunata*, new species

Frons broad, rounded, slightly prominent; eye reduced, surrounded by an

unsclerotized ring; antenna filiform, with tufts of cilia below in male, pubescent in female; labial palpus obliquely upturned, third joint porrect, short, conical, partly concealed in scales of second; maxillary palpus prominent, considerably exceeding frons, ending in an expanded tuft of scales. Body robust; legs rather thick, outer spurs shorter than inner; praecinctorium long, rather narrow, ending in a tuft of scales. Forewing with costa straight, apex fairly sharp, outer margin straight, tornus slightly rounded; R_1 and R_2 from well before end of cell, R_2 not approximated to R_{3+4}; R_3 and R_4 short-stalked; R_5 from upper angle of cell, weakly curved towards R_{3+4}; M_1 from somewhat below upper angle; discocellular straight, almost erect; M_2 from lower angle of cell, M_3 from a short distance basad of it, Cu_1 an equal distance basad of M_3, these veins straight and not approximated; Cu_2 widely separated from Cu_1, arising from cell at about two-thirds; anal area somewhat expanded, 3rd A strong, free. Hind wing with Sc and R_s very briefly anastomosed, R_s briefly stalked with M_1; cell less than half length of wing; discocellular curved, lower part somewhat oblique; M_2, M_3 and Cu_1 arising close together around end of cell, M_2 and M_3 weakly approximated basally; Cu_2 distinctly separated from Cu_1, but arising very near end of cell; three anals present.

Male Genitalia. Uncus oval, bilobed distally, rolled down and setose laterally; gnathos tapering, with a low hump on each side at middle, sides thickened, tegumen narrow, not domed; juxta bilobed, joining a broad anellus; vinculum narrow; valve broadly ovate, strongly fluted, a small, uncinate porcess from costal margin near base, a strengthening ridge behind middle; penis cylindrical, distally tapering, with a large hook-like cornutus.

Female Genitalia. Ovipositor with triangular, sparsely and minutely setose lobes; apophyses long and strong; posterior apophysis ending in a strong, anteriorly and posteriorly irregularly fimbriated, plate; bursa pyriform, membranous, with a pair of indented, strongly spinose signa.

Range. Southeastern California.

Only the type species is known.

Porphyrorhegma fortunata, new species

Figs. 45, 133-135, 197, 235.

Head above light greenish grey, palpi greyish white, tipped with black; antenna black, scaled with light greenish grey above; proboscis scaled with greyish white at base; thorax above with dense fuscous scaling, heavily overlaid with looser, greenish-grey scaling; abdomen above fuscous, powdered with bluish-white scales; anal tuft white; head and thorax beneath and legs milky white, tarsi somewhat infuscated; abdomen beneath fuscous; anal tuft white. Forewing above fuscous, heavily overlaid with somewhat fugitive greenish-grey scales, fresh specimens appearing dominantly pale greenish grey; broad, diffuse bright-purple antemedial and postmedial bands, often connected by the diffuse purple discocellular patch; fringe light grey. Hind wing above blackish fuscous, with some milky-white scaling in basal half; fringe pale on distal half. Wings beneath blackish fuscous, costa and apical area of forewing and limited areas at base of costa and at apex of hind wing scaled with milky white. Expanse 11 mm.

Male and Female Genitalia. As described for the genus.

Holotype, male, Fish Creek Mts., Imperial Co., Calif., April 1, 1955, D. F. Hardwick.

Allotype, female, and five paratypes, Ibanpah Mts., San Bernardino Co., Calif., May 3, 1939. Five paratypes, Mirage Lake, San Bernardino Co., Calif., April 18, 1935.

Holotype and two paratypes, type No. 6967, C.N.C.; allotype and two paratypes in Los Angeles County Museum; five paratypes in United States National Museum.

Life History. Unknown.

Psammobotys, new genus

Type-species: *Psammobotys fordi*, new species

Frons broad, rounded, somewhat prominent; eye reduced; gena naked, rest of orbit scaled; ocellus large; antenna filiform, long-ciliated; labial palpus drooping, with long bushy scaling, third joint concealed in vestiture of second; maxillary palpus prominent, with a loose apical tuft of scales; proboscis prominent; body robust; legs moderate; praecinctorium transverse, ending in a fan-shaped tuft of scales. Forewing with apex rounded, outer margin somewhat oblique; R_1 from well before end of cell; R_2 bent and approximated to R_{3+4} basally; R_3 and R_4 short-stalked; R_5 straight, from just behind anterior angle of cell; M_1 from well behind anterior angle; discocellular outwardly oblique in its posterior portion; M_2 and M_3 from posterior angle of cell, weakly approximated basally; Cu_1 from just basad of angle; Cu_2 from cell at two-thirds. Hind wing with Sc and R_s briefly anastomosed; M_1 from upper angle of cell, not stalked with R_s; posterior part of discocellular strongly oblique; cell more than half length of wing, its posterior angle very acute; M_3 from posterior angle of cell, M_2 from just before it and Cu_1 from just behind it, these veins running close together but not basally approximated; Cu_2 from cell at four-fifths; three anals present.

Male Genitalia. Uncus broadly ovate, bilobed distally, laterally decurved and setose; tegumen narrow, not humped; gnathos bottle shaped, with a few spines dorsally at tip; valve finely fluted, anterior margin excavated, apex narrowly rounded, distal and ventral margins broadly rounded; penis short, curved, conical, with a curved needle-like cornutus.

Female Genitalia. Not studied.

Range. Southern California.

Only the type species is known.

Psammobotys fordi, new species

Figs. 46, 136-138, 198.

Frons black; head and body fuscous, with considerable admixture of light-grey and light-buff scales; legs light grey. Forewing above light grey with considerable darker grey and fulvous dusting, basal and postmedial areas darker than disc; antemedial line obscure, black, oblique outward to Cu, then broken and offset inward, thence erect to inner margin; a black discocellular lunule, united posteriorly with postmedial line; postmedial line black, sinuous, slightly oblique basad of M_1, thence excurved opposite end of cell, then retracted to posterior angle; briefly incurved, then oblique to tornus; fringe variegated light and dark grey. Hind wing above light grey, marginally infuscated; male with two small fuscous patches behind apex of cell; fringe dark grey basally, paler distally. Wings beneath grey, postmedial area infuscated, more strongly on forewing than on hind wing; forewing with a fuscous discocellular lunule. Expanse 12 to 14 mm.

Male Genitalia. As described for the genus.

Holotype, male, allotype, female, and paratyes, Sand Dunes, El Segundo, Los Angeles Co., Calif., March, 1955, R. L. Ford. Holotype, allotype and a series of paratypes in the Los Angeles County Museum; remaining paratypes, type No. 6968, C.N.C.

Life History. Unknown.

Mimoschinia Warren

Type-species: *Botys thalialis* Walker, by original designation

Mimoschinia Warren, 1892: 174.

Frons prominent, strongly domed above; eye large; gena naked; ocellus prominent; antenna filiform, strongly ciliated; labial palpus obliquely porrect, third joint exposed; maxillary palpus prominent, filiform; body robust; legs moderate, outer spurs nearly as long as inner; praecinctorium narrow, longitudinal, with a small distal tuft of scales. Forewing subtriangular; R_1 from well before apex of cell; R_2 from just before apex, not approximated to R_{3+4}; R_3 and R_4 long-stalked; R_5 from just behind apex of cell, not approximated to R_{3+4}; M_1 from a little behind R_5; discocellular oblique, hardly curved; M_2 and M_3 arising close together at posterior angle of cell; Cu_1 from a little basad of posterior angle; Cu_2 from cell at three-fifths; third anal free. Hind wing rounded; Sc and R_s briefly anastomosed; R_s weakly stalked with M_1; discocellular curved, lower part strongly oblique; M_2 and M_3 from angle of cell, weakly approximated basally; Cu_1 from a little basad of cell, very slightly deflected towards M_3 basally; Cu_2 from cell at three-fifths; three anals present.

Male Genitalia. Uncus slender, tapering, bilobed; gnathos triangular at base, tapering gradually to a slender point; tegumen moderately broad, not humped; juxta bivalvate; valve broadly rounded, with a weak carina ventrad at axis; penis strongly bent, the basal part weakly recurved.

Female Genitalia. Ovipositor rather strongly sclerotized, its dorsal extremity posteriorly directed; apophyses slender but well sclerotized, fairly long; ductus bursae slender, cylindrical and membranous at ostial end, with an incomplete, rather long, sclerotized collar; distal end with an incomplete, rather long, sclerotized collar; distal part broad and obliquely pleated, moderately sclerotized, with a broad, twisted expansion at its junction with the narrow, ostial part; bursa proper subconical, membranous, weakly pleated and denticulated.

Mimoschinia rufofascialis (Stephens), new combination

Pyralis fascialis Haworth, 1803: 390.
Ennychia fascialis, Stephens, 1829: 162.
Ennychia rufofascialis Stephens, 1834: 33.
Botys ? thalialis Walker, 1859: 582.
Anthophila ? perviana Walker, 1865: 804.
Pyralis gelidalis Walker, 1865: 1229.
Thelcteria costaemaculalis Snellen, 1887: 54.
Mimoschinia thalialis, Warren, 1892: 174.
Noctuelia thalialis, Hampson, 1899: 279.
Noctuelia rufofascialis, McDunnough, 1939: 17.

This species is widely distributed in North and Central America and the West Indies. The type of *fascialis* and *rufofascialis* reputedly came from England, but is actually a specimen of the West Indian subspecies to which the name *thalialis* also applies. The nominate subspecies has so far not been reported from North America, but it may possibly yet be found in Florida.

Mimoschinia rufofascialis novalis (Grote), new combination

Figs. 48-51, 139-141, 199, 236.

Emprepes novalis Grote, 1876: 156.
Noctuelia thalialis, Hampson, 1899: 279, in part.
Noctuelia rufofascialis novalis, McDunnough, 1939: 17, in part.

Frons brown, bordered with yellowish buff laterally and anteriorly; vertex with mixed brown and yellowish-buff scales; palpi greyish buff, labial palpus with some fuscous scaling dorsally; eye fuscous; proboscis greyish buff at base; thorax above pale yellowish- or olivaceous-buff; abdomen above light fuscous; thorax

beneath greyish white; legs greyish white ventrally, fuscous dorsally; abdomen beneath pale yellowish buff. Forewing above pale yellowish buff, sometimes with an olivaceous tint, sometimes more or less infuscated, especially on disc; a small fuscous basal dash on costa and a slightly larger one on posterior margin; an outwardly oblique rufous antemedial band, somewhat variable in width and definition; a somewhat diffuse, trapezoidal, rufous, medial patch on costa, variable in size; a weakly sigmoidal rufous postmedial band, corresponding in breadth to antemedial; a diffuse greyish-fuscous apical patch, followed in some specimens by traces of a subterminal band of the same hue; fringe pale yellowish buff. Hind wing above fuscous, a little darker distally; fringe white. Forewing beneath fuscous, some paler scaling on basal two-thirds; costa and fringe yellowish buff. Hind wing beneath greyish buff, weakly infuscated distally. Expanse 11.5 to 25 mm.

Type. Texas, Belfrage, in British Museum (Natural History).

Range. Texas to southern Alberta and British Columbia, and west to southern California; replaced by other subspecies in southern Arizona and New Mexico and in the Bay region of California.

Material Examined. 145 specimens, from: Texas: Brownsville; Georgetown; El Paso; Limpia Canyon, Jeff Davis Co.; Oklahoma: Norman; Colorado: Boulder; Wyoming: Continental Divide, Yellowstone Park; Montana: Jefferson Co.; Hamilton; Alberta: Medicine Hat; Purple Springs; Orion; Lethbridge; Waterton Lakes Park; British Columbia: Kaslo; Fernie; Vernon; Washington: Leavenworth, Chelan Co.; Dry Falls, Grant Co.; Toppenish; Walla Walla; Wallula; Oregon: Biggs; Utah: Vineyard; Eureka; Nevada: Valley of Fire; Searchlight, Clark Co.; California: Old Woman's Spring; Split Rock Tank, Mojave Desert; Riverside; Providence Mts.; Desert Hot Springs; Needles, San Bernardino Co.; Apple Valley; Chino Canyon, Palm Springs; Clark Mts., 4000 ft.; Twenty-nine Palms, San Bernardino Co.; La Mesa, San Diego Co.

Life History. Described by Heinrich (1921: 829) and Leech (1949). Larva a seed feeder in various malvaceous plants, including *Abutilon*, *Malvastrum*, *Wissadula*, *Sida* and *Althea*. Mature larva white, with a wine-red band on each segment (Leech), or with the entire thorax wine-red (Heinrich); crochets of prolegs uniordinal, arranged in a circle broken outwardly. Pupa in a thin cocoon in seed-pod or outside plant.

Remarks. On the whole the series from this wide and diversified area agree well with Texas material. The species is everywhere somewhat variable in size and colour; the largest specimens are from Kaslo and Fernie, B.C., and Hamilton, Mont., across the border. I have separated the contrastingly coloured population of southern Arizona and New Mexico and the large, suffused form from the San Francisco region, for both of which names are available, as subspecies, but it is likely that they intergrade peripherally with *novalis*. A full study of the range and variation, based on much more extensive material, is desirable. The North American populations as a whole differ obviously from those of the West Indies, which are characterized by smaller average size, duller and browner forewing, with less pronounced rufous tints in the transverse band and with heavier terminal markings, and by pale-based hind wings, with contrasting terminal infuscation.

Mimoschinia rufofascialis decorata (Druce), new combination and status

Fig. 47.

Eustrotia decorata Druce, 1898: 495, Pl. 95, Fig. 14.
Noctuelia rufofascialis novalis form *decorata*, McDunnough, 1939: 17.

In general this subspecies is similar to *M. r. novalis*, but with very pale, clear,

yellowish-buff ground colour, and with strongly contrasting rufous bands; a definite but rather scarce dimorphic form has the ground colour completely suffused with reddish fuscous and the hind wings also much darkened. On the average the size is smaller than in *novalis*, but this seems to be locally variable.

Type. Northern Sonora, Mexico (Morrison), in British Museum (Natural History).

Range. Southern Arizona and New Mexico; northern Sonora.

Material Examined. Fifty-five specimens from: – Arizona: Madera Canyon, Sta. Rita Mts.; Baboquivari Mts.; Globe; Huachuca Mts.; Nogales; Patagonia; Chiricahua Mts., 5700-7000 ft.; Washington Mts.; New Mexico: State College, Dona Ana Co.; Mesilla Park; Las Cruces; Silver City; Carlsbad, Eddy Co.; Artesia, Eddy Co.; Lordsburg, Hidalgo Co.

Mimoschinia rufofascialis nuchalis (Grote)

Fig. 52.

Emprepes nuchalis Grote, 1878: 675.
Nimoschinia nuchalis, Warren, 1892: 174.
Noctuelia nuchalis, Hampson, 1899: 280.

Larger on the average than most populations of *M. r. novalis*, and much darker and more suffused; specimens with buff ground colour exceptional; ground of most specimens deep greenish grey, in some specimens almost wholly suffused with rufous; distinguished from the dark form of *M. r. decorata* by the larger size and somewhat less intense rufous colouring.

Type. California (Hy. Edwards), in British Museum (Natural History).

Range. San Francisco Bay region, California.

Material Examined. Twenty-one specimens from California: Petaluma; Hopland; Mt. San Hedron, Lake Co.; The Geysers, Sonoma Co.; St. Helena.

Jativa, new genus

Type-species: *Orobena castanealis* Hulst

Frons prominent, domed; gena naked; vertex rather smoothly scaled; eye large; ocellus well-developed, close to eye; labial palpus fairly slender, obliquely upturned, smoothly scaled, second segment fairly long, third segment cylindrical, a little less oblique than second, and not concealed in scaling; maxillary palpus prominent, filiform, proboscis prominent and coiled; antenna filiform; body and legs robust; praecinctorium with a transverse, fan-like tuft of scales. Forewing fairly broad, outer margin somewhat rounded; R_1 from cell at two-thirds; R_2 from just before angle, and R_3 somewhat inclined posteriorly beyond its separation; R_{3+4} from angle of cell, length of stalk less than length of free part of veins; R_5 from just behind angle; M_1 from a little behind R_5; R_{3+4}, R_5 and M_1 divergent; discocellular slightly incurved behind M_1, then oblique distad; M_2 and M_3 from angle of cell, a little separated at base; Cu_1 from well behind M_3, but distinctly deflected towards it basally; Cu_2 from cell at three-fourths; 2nd A ending at tornus; 3rd A weak, free. Hind wing with Sc distinctly anastomosed for a moderate distance with R_s; M_1 free; discocellular incurved anteriorly, strongly oblique distad posteriorly; M_2, M_3 and Cu_1 from close together at posterior angle of cell; Cu_2 from cell at four-fifths; three anals present.

Male Genitalia. Uncus subtriangular, narrowly bilobed; gnathos robust and claviform, tapering to a sharp point; tegumen of moderate width; vinculum centrally carinate; juxta bilobed, extending into a conical anellus; penis slender and curved; valve rounded, with strong radial fluting.

Female Genitalia. Ovipositor elongate, fluted laterally, lobes reduced, obtusely pointed, and clothed with minute setae; intersegmental membrane

anterior to ovipositor heavily covered with anteriorly directed spines; apophyses long, straight and robust; posterior apophyses expanded and compressed posteriorly; ductus bursae slender and membranous; bursa small, globular, unarmed.

Only one species is known. The genus is close to *Mimoschinia* in external characters, but differs strongly in genitalic structure, especially in the female.

Jativa castanealis (Hulst), new combination

Figs. 53, 166-168, 200, 237.

Orobena castanealis Hulst, 1886: 157.
Noctuelia castanealis, Fernald, 1902: 394.
Thalpochares jativa Barnes, 1905: 213.

Frons bulbous, reddish brown centrally, creamy buff laterally and anteriorly; vertex roughly scaled, reddish brown medially, with prominent creamy-buff tufts laterally; labial palpus whitish buff, basal half of second segment and all of third segment fuscous; maxillary palpus fuscous, segments tipped with whitish buff; antenna creamy buff above; thorax above reddish brown, narrowly striped with creamy buff; abdomen above light buff, tipped with whitish buff; body beneath and legs creamy buff. Forewing above reddish brown; a strongly outwardly oblique, creamy-buff, sub-basal band; a Y-shaped, creamy-buff, medial band; fringe reddish brown. Hind wing above pale buff, distal half in some specimens somewhat infuscated or tinged with rufous. Forewing beneath pale reddish buff, markings of upper surface faintly repeated, a variable amount of fuscous scaling on disc. Hind wing beneath as above. Expanse 13 to 18 mm.

Male and Female Genitalia. As described for the genus.

Types. Of *castanealis*, holotype, female, [cited by Hulst as male], Texas, in American Museum of Natural History; of *jativa*, holotype, male, southern Arizona, in United States National Museum.

Range. Texas to Arizona.

Material Examined. Eight specimens from: — Arizona: Sabino Canyon, Baboquivari Mts., Pima Co.; Oracle; Wickenburg, Yuma Co.; New Mexico: White City, Eddy Co.

Life History. Unknown.

Pseudoschinia, new genus

Type-species: *Eurycreon elautalis* Grote

Frons prominent, rounded; labial palpus porrect, only slightly exceeding frons, second joint weakly oblique; third joint porrect, short, blunt, not concealed in scaling of second; maxillary palpus prominent, ending in an expanded tuft of scales; gena naked; eye large; ocellus prominent; antenna filiform; body robust; legs rather long and slender; praecinctorium small and slender, ending in a narrow, transverse, rounded tuft of scales. Forewing broad and subtriangular, apex slightly rounded; R_1 from well before apex of cell; R_2 from near apex of cell, basally very faintly approximated to R_{3+4}; stalk of R_3 and R_4 short, much shorter than the free parts of those veins; R_5 from a little behind R_{3+4}, not approximated to it; M_1 from just behind R_5; discocellular weakly oblique; M_2 from before posterior angle of cell, M_3 from angle, Cu_1 from a little basad of angle; M_2 and M_3 not approximated, Cu_1 very faintly deflected towards M_3 basally; Cu_2 from cell beyond two-thirds; third anal weak, free. Hind wing with Sc and R_s briefly anastomosed, R_s and M_1 briefly stalked; discocellular curved, its lower part oblique; M_2, M_3 and Cu_1 arising close together at lower angle of cell, these three veins weakly approximated in their basal parts; Cu_2 from cell beyond two-thirds. Three anals present.

Male Genitalia. Uncus narrowly trapezoidal, bilobed; gnathos V-shaped,

somewhat finger-like distally; tegumen narrow, not humped; juxta bivalvate; valve broad and rounded; penis evenly curved, unarmed.

Female Genitalia. Ovipositor normal, soft; apophyses slender and weak; ductus bursae slender, membranous, with a moderately long sclerotized collar; bursa with a long, trough-shaped sclerotization on one side.

This genus is closely related to *Mimoschinia* but differs in the short stalking of R_3 and R_4, in the absence of a cornutus in the male and in the radically different ovipositor and bursa of the female. Only one species is known.

Pseudoschinia elautalis (Grote), new combination

Figs. 54-56, 142-144, 201, 238.

Eurycreon elautalis Grote, 1881: 168.
Emprepes magnalis Hulst, 1886: 147.
Mimoschinia elautalis, Warren, 1892: 174.
Noctuelia elautalis, Hampson, 1899: 280.

Head, including palpi and dorsal surface of antenna, and body above light ochreous buff, brownish in darker specimens, or with considerable white scaling in pale specimens; body beneath and legs white, with some yellowish tints, especially on abdomen and legs. Forewing above pale brownish or yellowish ochreous, in some specimens almost immaculate, but in normal specimens with basal area brown, delimited by an outwardly oblique, somewhat irregular, fuscous, antemedial line; some specimens with traces of a brown orbicular dot; most specimens with a small, obscure, brown, discocellular lunule; a fuscous postmedial line, bowed outward opposite cell, and again at inner margin, followed immediately by a brown shade; fringe buff in darker specimens, white in paler ones. Hind wing white, usually with a weak, diffuse, fuscous, postmedial line, followed by weak infuscation in the marginal area; fringe light buff or white. Forewing beneath varying from immaculate yellowish white to dull fuscous with darker postmedial shade; hind wing beneath white or light buff, immaculate or with a diffuse fuscous postmedial line. Expanse 21 to 26 mm.

Male and Female Genitalia. As described for the genus.

Types. Of *elautalis*, Tucson, Ariz., in British Museum (Natural History); of *magnalis*, lectotype, male, Arizona, in American Museum of Natural History, designated by Klots (1942).

Range. Southern California to New Mexico.

Material Examined. Ninety-six specimens, from: — New Mexico: Alamogordo, Otero Co.; Arizona: Tucson; Golden Age; New River, Maricopa Co.; Globe; Quinlan Mts.; Baboquivari Mts.; Sodona; Madera Canyon, Sta. Rita Mts.; Roosevelt; Superior; Oracle; Fish Creek, Tonto Nat. Forest; California: Twenty-nine Palms, San Bernardino Co.; Providence Mts.; Borego; Clark Mts.

Life History. Unknown.

A common and variable species.

Noctueliopsis, new genus

Type-species: *Noctuelia puertalis* Barnes and McDunnough

Frons prominent, oblique, weakly rounded above, sloping forward to the well-defined ventral margin; labial palpus porrect, second joint oblique, third joint hidden in the conical scaling of the second; maxillary palpus prominent, with an expanded distal tuft of scales; eye large; gena naked; ocellus prominent; antenna filiform or weakly compressed, ciliated. Forewing of moderate width, outer margin rounded or somewhat oblique; R_1 from well before apex of cell; R_2 deflected and strongly approximated to R_{3+4} basally; stalk of R_3 and R_4 about equal to the free length of those veins; R_5 not or weakly approximated to R_{3+4}; M_1 from

somewhat below R_5; discocellular weakly oblique; M_2 and M_3 weakly approximated; Cu_1 distinctly removed from M_3; m-cu at a considerable angle to basal part of Cu_1; Cu_2 from well before posterior angle of cell. Hind wing with Sc briefly anastomosed with R_s; discocellular strongly curved; M_2 and M_3 from posterior angle of cell, very weakly approximated basally; Cu_1 from a little basad of posterior angle, not approximated to M_3; Cu_2 from well before angle of cell; three anals present.

Male Genitalia. Uncus bilobed, parallel-sided, narrowly triangular, or ovate; gnathos slender and rod-like; juxta not conspicuously bivalvate, often elongate, closely apposed to penis; valve variable, usually constricted at base and with costa strongly curved; penis short, stout, strongly curved, with a single cornutus.

Female Genitalia. Ovipositor simple, rather well sclerotized; apophyses slender; bursa small, unarmed or nearly so.

A southwestern genus, ranging into Mexico.

Key to the Species

1. Antemedial line or outer border of basal area of forewing inwardly oblique from costa to inner margin 2
   General course of antemedial line of forewing erect or slightly outwardly oblique, line obtusely angled on Cu 6
2. Basal area of forewing pink 3
   Basal area of forewing olivaceous or brown 4
3. Outer edge of basal area of forewing strongly oblique, more so than outer margin of wing ..... *aridalis* Barnes and McDunnough
   Outer edge of basal area of forewing weakly oblique, less oblique than outer margin of wing ..... *pandoralis* Barnes and McDunnough
4. Labial palpus unusually long, exceeding frons by much more than diameter of eye; a robust species ranging from central California north to Oregon ..... *atascaderalis* Munroe
   Labial palpus of normal length, exceeding frons by less than diameter of eye; small, slight species from arid regions of the Southwest 5
5. Antemedial line of forewing strongly oblique, about parallel to outer margin; postmedial line strongly sinuous, but the sinuations smooth and regular ..... *virula* Barnes and McDunnough
   Antemedial line of forewing less oblique than outer margin; postmedial line with sinuations wavering or crenulated ..... *bububattalis* Hulst
6. Forewing above matt; medial area of forewing defined by narrow, fuscous, antemedial and postmedial lines ..... *puertalis* Barnes and McDunnough
   Forewing above silky; medial area of forewing not defined by fuscous lines but only by a sharp change in ground colour ..... *palmalis* Barnes and McDunnough

Noctueliopsis puertalis (Barnes and McDunnough), new combination

Figs. 57, 145-147, 202, 239.

Noctuelia puertalis Barnes and McDunnough, 1912: 220.

Head buff, paler at sides of frons and tips of palpi, some orange-brown scaling on vertex; body above with mixed light-buff and orange-brown scales; body beneath greyish buff; legs light grey. Forewing with outer margin rounded, weakly oblique; basal area above light brown, dusted with greyish buff; antemedial line narrow, blackish fuscous, oblique outward from costa to Cu, thence erect or weakly angulated to inner margin; medial area light buff, heavily clouded with light brown in middle; discocellular bar blackish fuscous, distinct; postmedial line narrow, well defined, blackish fuscous, angled inward behind costa, then broadly but somewhat irregularly excurved around cell, weakly retracted and bilobed near posterior angle of cell, then outcurved and erect to inner margin; area beyond postmedial line dull brown with some pale-buff scaling; a diffuse, dark-brown, marginal line; fringe pale buff, with a broken darker line in base. Hind wing above light fuscous, a little paler towards costa; traces of an obscure

darker postmedial line, strongest at about Cu_2, and preceded and followed there by a small patch of pale-buff and fulvous scales; fringe greyish white, with a fuscous line in basal half. Wings beneath silky fuscous brown, pattern of upper side very faintly indicated. Expanse 12 to 22 mm.

Male Genitalia. Uncus bilobed, narrowly tapering; gnathos slender and finger-like, slightly swollen distally; juxta prolonged into a trough-shaped anellus; tegumen narrow; valve with costal part somewhat expanded; penis short, not very stout, curved, with a rather stout cornutus.

Female Genitalia. Ovipositor lobes moderately sclerotized; apophyses slender but straight and well sclerotized; bursa membranous, with two small round signa.

Types. Holotype, male, La Puerta Valley, Calif., July 11, G. H. Field, in United States National Museum.

Range. Western Texas to Nevada, Utah and southern California.

Material Examined. Forty-two specimens from: – Texas: El Paso; Crane, Crane Co.; Pecos, Reeves Co.; Marathon, Brewster Co.; New Mexico: Silver City; Utah: Wendover; Nevada: Valley of Fire; Arizona: Madera Canyon, Sta. Rita Mts.; Golden Age; Paradise; Aguila, Maricopa Co.; Magna; Tucson; California: Barstow; Vidal; Victorville; Shaveze Well; Silver Canyon, White Mts.; Inyo Co.

Life History. Unknown.

Noctueliopsis palmalis (Barnes and McDunnough), new combination

Figs. 58, 148-150, 203, 240.

Noctuelia palmalis Barnes and McDunnough, 1918: 167, Pl. 23, Fig. 5.

Head, including palpi and dorsal surface of antenna, pale buff, often a few light-fulvous scales on vertex; thorax above greyish buff or fulvous, with some pale-buff scales; abdomen above pale buff, with a varying amount of fulvous scaling; thorax beneath and legs pale greyish buff, often with weak fulvous tints; abdomen beneath pale fulvous or greyish buff. Forewing apex rounded, outer margin oblique; upper surface silky light brown, varying from greyish to fulvous or almost pinkish; disc somewhat paler than basal and terminal areas, but often suffused centrally; antemedial line absent or faintly visible as a dark shade, but its position marked by a definite border between darker basal and paler medial area, roughly erect or very weakly outwardly oblique; an obscure dark discocellular lunule; postmedial line obscure or absent, but marked by the junction between the pale medial and darker terminal regions; fringe concolorous with wing or somewhat greyer, with obscure darker basal and medial lines. Hind wing above light fulvous brown, outer margin sometimes very narrowly and weakly infuscated; fringe as on forewing. Wings beneath uniformly light buff or greyish buff, inner-marginal area of forewing silky grey; fringes as above. Expanse 14 to 18 mm.

Male Genitalia. Uncus rounded laterally and rather strongly ciliated; lobes only weakly demarcated distally; tegumen somewhat humped; gnathos slender and tapering to a point; juxta small and closely appressed to penis; vinculum narrow; valve long, costa highly arched, sacculus weakly inflated at base, ventral margin recurved; penis short and stout, curved, with a long slender cornutus.

Female Genitalia. Ovipositor lobes narrow, somewhat elongate, sparsely setose; apophyses long, straight and slender, cross-piece of posterior apophysis rather broad; ductus and bursa membranous.

Type. Lectotype, male, Palm Springs, Riverside Co., Calif., in United States National Museum.

Range. New Mexico to Southern California.

Material Examined. Twenty-seven specimens from: – New Mexico: no exact locality; Arizona: Golden Age; California: Palm Springs, Riverside Co.; Dixieland, Imperial Co.; Thousand Palms.

Life History. Unknown.

***Noctueliopsis atascaderalis* (Munroe), new combination**

Figs. 59, 151-153, 204, 241.

Noctuelia atascaderalis Munroe, 1951: 169, Fig. 14, Pl. 1, Fig. 10.

Frons dark grey, paler at sides; palpi grey; vertex brown; body beneath and legs greyish buff. Forewing with apex somewhat rounded, outer margin moderately oblique; upper surface brown, with a slight rufous tint, medial area paler than basal and terminal areas; basal area delimited by an obscure, darker rufous-brown, inwardly oblique, antemedial line, followed by a greyish-white shade; discocellular lunule obsolete or very faintly indicated; postmedial line coloured like antemedial, but with pale shade preceding dark line, oblique inward to R_{s+5}, thence narrowly excurved opposite cell, then broadly but shallowly incurved, finally oblique outward to near tornus; an even white or pale-buff subterminal line from just behind costa to near tornus; fringe with basal half brown, distal half pale buff. Hind wing above brownish fuscous, an obscure fulvous streak behind Cu_2, bearing two pale dots; fringe with basal half fuscous, distal half pale buff. Under side uniformly brownish fuscous. Expanse 14 to 16 mm.

Male Genitalia. Uncus rounded and densely setose laterally; tegumen weakly humped; juxta small and closely appressed to penis; vinculum narrow; valve with costal margin strongly curved, ventral margin weakly recurved; penis short and stout, with a slender, moderately long cornutus.

Female Genitalia. Ovipositor lobes subquadrate, moderately setose; apophyses long and slender, cross-piece of posterior apophysis flattened and expanded; bursa membranous, with a short, curved signum.

Type. Holotype, male, Atascadero, California, July 26, 1935, E. C. Johnston. No. 5937, C.N.C.

Range. Central and western California; Oregon.

Material Examined. Thirty-five specimens from: – Oregon: Eugene; California: Atascadero; Angels Camp; Red Bluff, Tehama Co.; Oroville; Oakdale; Bear River, Placer Co.

Life History. Unknown.

***Noctueliopsis aridalis* (Barnes and Benjamin), new combination**

Figs. 60, 61, 205, 242.

Noctuelia aridalis Barnes and Benjamin, 1922: 48.

Head whitish buff, vertex slightly yellowish; thorax whitish buff above, with pink markings of variable extent – usually a mid-dorsal vitta and a mark on each tegula; abdomen dull grey, tipped with pale buff; body and legs beneath pale greyish buff. Forewing with outer margin oblique, slightly rounded; upper side with basal area pink, with a pale-buff dash of varying extent along and behind Cu, and a variable amount of pale-buff dusting elsewhere; outer edge of basal area strongly outwardy oblique to anterior margin of cell, there acutely angled and strongly inwardly oblique to inner margin; medial area grey, with more or less extensive pink shading, concentrated in triangles based on costal and inner margins; terminal area varying from buff to bright pink, its inner edge nearly parallel to outer margin, posteriorly curved outward to tornus; fringe grey, with a variable amount of pink scaling in basal part. Hind wing above light greyish buff, slightly infuscated terminally; fringe pale grey. Wings beneath light grey; forewing somewhat infuscated except terminally. Expanse 12 to 15 mm.

Male Genitalia. Uncus bilobed, outer margins moderately rounded, setose; tegumen weakly humped; gnathos slender, rod-like, slightly narrowed in middle, rounded at tip; juxta prolonged into a trough-like anellus, closely apposed to penis; valve ovate, constricted basally, a weak medial strengthening ridge in basal part; penis short, weakly curved.

Female Genitalia. Ovipositor lobes produced and narrowed, triangular, sparsely setose; apophyses slender and straight, posterior apophysis without cross-bar; bursa small and membranous.

Type. Holotype, male, Dixieland, Imperial Co., Calif., March 15-30, O. C. Poling, in United States National Museum.

Range. Southern California; Southern Nevada; Arizona.

Material Examined. Seventy-nine specimens, from: – California: Dixieland, Imperial Co.; Desert Hot Springs; Thousand Palms; Indio; Stovepipe Wells; Andreas Canyon, Palm Springs.

Life History. Unknown.

***Noctueliopsis pandoralis* (Barnes and McDunnough), new combination**

Noctuelia pandoralis Barnes and McDunnough, 1914: 244, Pl. 2, Fig. 13.

"Head, thorax and primaries pale olive-brown, the latter with basal area more or less suffused with pink, this area defined outwardly by slight white scaling not attaining costa; terminal area pink preceded by a white shade band; fringes pale ochreous. Secondaries dark smoky with slight whitish shade above anal angle and subterminally on vein 2; fringes whitish ochreous. Expanse 12 mm." The figure shows the outer edge of the basal area much less strongly oblique than in *N. aridalis* and the darker shading of the medial area more extensive and even.

Male and Female Genitalia. Not studied.

Type. Lectotype, male, Deming, N.M., in United States National Museum (present selection).

Range. Recorded only from the type locality.

Life History. Unknown.

***Noctueliopsis bububattalis* (Hulst), new combination**

Figs. 62, 206, 243.

Botis bububattalis Hulst, 1886: 149.
Titanio bububattalis, Fernald, 1902: 347.
Noctuelia tectalis Barnes and McDunnough, 1914: 243, Pl. II, Fig. 10.
Noctuelia bububattalis, Barnes and McDunnough, 1916:, 191.

Frons light clay-coloured, bordered laterally with whitish buff; basal segment of antenna whitish buff, shaft brown with some whitish-buff scales; palpi clay-coloured, labial palpus light grey basally beneath; thorax above clay-coloured; abdomen above shining grey; body beneath and legs grey. Forewing with costa straight, outer margin rather oblique, apex narrowly rounded; ground colour above light argillaceous or tan, medial area somewhat more rufous; antemedial line obscure, dark grey or brown followed by a whitish-buff shade, oblique outward from costa to cell, then straight and inwardly oblique to inner margin at one-third; an inconspicuous dark discocellular lunule; postmedial line obscure, dark grey or brown, preceded by a narrow, whitish-buff shade, weakly and irregularly dentate, beginning at costa near apex, incurved to posterior angle of cell, then excurved to near tornus; a crenulated, whitish-buff marginal band, sometimes followed by a narrow, even line of ground colour at the extreme margin; fringe buff, slightly darker basally than distally. Hind wing above light fuscous, unmarked; fringe grey, with a darker sub-basal line. Wings beneath uniformly light fuscous; fringes grey, with a darker sub-basal line. Expanse 13 to 15 mm.

Male Genitalia. Uncus subtriangular, bilobed; tegumen weakly humped; gnathos long and clavate, pointed; vinculum narrow; juxta bivalved, produced into a trough-shaped anellus; valve broad and rounded, with a subcostal basal thickening and with radial fluting; penis short, stout and curved, with a strong cornutus.

Female Genitalia. Ovipositor lobes short, subquadrate, hardly setose; apophyses slender, straight, of moderate length; ductus bursae slender, with a small, sclerotized collar; bursa oval, membranous, minutely denticulated.

Types. Of *bububattalis*: Colorado, in the American Museum of Natural History; *of tectalis*: lectotype, male, Baboquivari Mts., Ariz. "♂ type", of Barnes and McDunnough, in United States National Museum (present designation).

Range. Western Texas to Colorado, Utah and southern California.

Material Examined. Fifty-five specimens from: Texas: Brewster Co.; Colorado: Estes Park; Utah: Vernal; Arizona: Quinlan Mts.; Florence; California: Borego; Needles, San Bernardino Co.; Thousand Palms; Indio.

Noctueliopsis virula (Barnes and McDunnough), new combination

Figs. 63, 207, 244.

Noctuelia virula Barnes and McDunnough, 1918: 168.

Frons dull brown, shading to pale greyish buff laterally; labial palpus grey; maxillary palpus greyish brown; thorax and abdomen above greyish brown; body beneath and legs grey. Forewing with costa straight, outer margin oblique and somewhat convex, apex narrowly rounded; upper surface with basal and subterminal areas dull clay brown, costal and medial areas a little paler; antemedial line narrow, black, followed by a diffuse whitish-buff shade, the line beginning on anterior margin of cell near middle of wing, straight and inwardly oblique to inner margin at two-fifths; postmedial line S-shaped, black, beginning a little behind costa, preceded by a pale-buff shade beginning on costa, the line oblique outward, then incurved behind cell, and outwardly oblique to tornus; a pale-buff line immediately before termen; terminal line rufous-argillaceous; fringe with basal half rufous-argillaceous, distal half grey. Hind wing above whitish grey, narrowly infuscated along termen; fringe grey. Forewing beneath olivaceous grey, the pattern of the upper side showing through faintly. Hind wing beneath light grey, costa and fringe brownish. Expanse 11 to 12 mm.

Male Genitalia. Uncus weakly bilobed, sides decurved, subparallel, strongly setose; gnathos strong, slender, gradually tapering; tegumen and vinculum narrow; juxta bivalved, prolonged into a trough-like anellus; penis stout and short, rapidly tapering, with a strong cornutus.

Female Genitalia. Ovipositor with subquadrate, sparsely setose lobes; apophyses slender and straight; cross-bar of posterior apophysis weak; bursa membranous; ductus with a narrow, weakly sclerotized collar.

Types. Syntypes: three males, three females, Palm Springs, Riverside Co., Calif., in United States National Museum. I select the specimen marked "♂ type" as lectotype.

Range. Southern California.

Material Examined. Twenty-three specimens from California: Essex; Dixieland, Imperial Co.; Needles, San Bernardino Co.; Borrego; Split Mt. Canyon, San Diego Co.; Thousand Palms; Andreas Canyon, Palm Springs.

Life History. Unknown.

Mojavia, new genus

Type-species: *Noctuelia achemonalis* Barnes and McDunnough

Frons produced, transversely wedge-shaped, very weakly domed above; labial palpus porrect; maxillary palpus prominent, filiform; proboscis well developed; eye large; gena narrow, unscaled; antenna filiform; ocellus large; body slight; legs slender; praecinctorium narrow, with a rounded tuft of scales at tip. Forewing rather broad, costa excavated in middle, outer margin oblique; R_1 from well before end of cell, R_2 bent and approximated to R_{3+4} at base; R_3 and R_4 long-stalked, their free parts widely divergent; R_5 from anterior angle of cell, straight and not approximated to R_{3+4}; M_1 from somewhat behind anterior angle of cell; cell unusually long; discocellular weakly curved; M_2, M_3, Cu_1 and Cu_2 rather evenly spaced around posterior angle of cell; anal area somewhat expanded but without a scale-tooth; 3rd A short and free. Hind wing rounded; Sc and R_s strongly anastomosed, the distal free portions strongly divergent; discocellular strongly oblique, lower angle of cell acute; M_2 and M_3 from angle; Cu_1 from just before angle; Cu_2 from cell at about five-sixths; three anals present.

Male Genitalia. Uncus bilobed, sides decurved and nearly parallel; tegumen weakly humped; gnathos slender and finger-like; vinculum broad; juxta somewhat elongate; penis short, cylindrical, weakly curved, with a slender cornutus; valve slender, costa curved, a central strengthening carina.

Female Genitalia. Ovipositor with reduced, sparsely setose lobes; apophyses long and slender, cross-bar of posterior apophysis expanded and plate-like; bursa membranous.

Mojavia achemonalis (Barnes and McDunnough), new combination

Figs. 64, 65, 154-156, 208, 245.

Noctuelia achemonalis Barnes and McDunnough, 1914: 243, Pl. 2, Fig. 12.
Noctuelia achemonalis pulcharalis Barnes and Benjamin, 1924: 266, new synonymy.

Head, palpi, body and legs uniformly light yellowish buff. Forewing above light yellowish buff; base, costal area and terminal area contrastingly bright pink; fringe grey. Hind wing above brownish fuscous. Wings beneath uniformly brownish fuscous. Expanse 11 to 12 mm.

Genitalia. As described for the genus.

Types. Of *achemonalis*: 13 syntypes, Redington, Ariz., and Deming, N.M.; I select the specimen from Redington, Ariz., marked "♂ type" as lectotype of *pulcharalis*: holotype, male, from "New Mexico". Both in the United States National Museum.

Range. Southern Arizona to western Texas.

Material Examined. Seven specimens, from: —Texas; New Mexico: Mesilla Park; Arizona: Madera Canyon, Sta Rita Mts.; 46 miles east of Ajo.

Life History. Unknown.

Barnes and Benjamin's *pulcharalis*, with restricted pale medial area on forewings, is probably best interpreted as a local form rather than as a subspecies. Of the two specimens from Mesilla Park one is a typical *achemonalis*, the other an extreme *pulcharalis*.

Eustixia Hübner

Type-species: *Eustixia pupula* Hübner, new designation.

Eustixia Hübner, 1823: 24.
Thelcteria Lederer, 1863: 350. Type-species: *Thelcteria pupula*.
Zeller = *Eustixia pupula* Hübner, by monotypy.

Frons conical, prominent; eye large; gena naked; labial palpus porrect, scaling slender, third joint exposed, short and blunt; maxillary palpus prominent and strongly dilated with scales at tip; proboscis well developed; body and legs robust.

Forewing short, costa straight, outer margin weakly curved, almost erect; R_1 arising before end of cell; R_2 and R_{3+4} arising from anterior angle of cell, approximated for a short distance basally; R_5 and R_4 long-stalked; R_5 and M_1 arising close together behind anterior angle, somewhat divergent; discocellular short, weakly curved; M_2 and M_3 arising close together at posterior angle of cell; Cu_1 from a little basad of posterior angle, weakly approximated to M_3 basally; Cu_2 from cell at four-fifths. Hind wing with Sc and R_s strongly anastomosed, but distal free parts longer than anastomosis; M_1 not stalked with R_s; discocellular incurved above middle, its posterior part long and oblique, but cell rather short; M_2 and M_3 from posterior angle, approximated basally; Cu_1 from a little basad of angle, weakly approximated basally to M_3; Cu_2 from cell at four-fifths; three anals present.

Male Genitalia. Uncus strongly bilobed, but not setose; gnathos short, bridge-like; vinculum narrow; juxta pyriform; penis cylindrical, weakly curved, with a single cornutus; valve short and fairly broad; costa straight and weakly inflated; outer margin rounded.

Female Genitalia. Ovipositor lobes normal, densely setose; posterior apophysis short and curved; anterior apophysis longer, triangularly expanded posteriorly, irregularly bent anteriorly; ductus bursae at ostial end funnel-shaped and sclerotized, distally membranous; bursa small and membranous.

Eustixia pupula Hübner

Figs. 66, 157-159, 209, 246.

Eustixia pupula Hübner, 1823: 24, Figs. 327, 328.
Thelcteria pupula, Lederer, 1863: 351, Pl. 7, Fig. 15.

Frons and vertex silvery white; eye, antenna, maxillary palpus and dorsal part of labial palpus jet black; base of proboscis and ventral part of labial palpus basally silvery white; thorax above silvery white, with a black spot at base of tegula; thorax beneath and legs white, mesal surfaces of front femur and tibia blackish fuscous; abdomen white. Forewing above silvery white, marked with jet black as follows: an oblique basal spot from costa to anal fold; an antemedial spot on costa; two spots just beyond it in cell, one in middle and one just behind the first on Cu; another spot directly behind these on inner margin and one somewhat distad of them on 2nd A; a round discocellular spot, joining a triangular spot on costa; a postmedial row of spots, weakly excurved around angle of cell; three terminal dots subapically and three more behind middle of wing. Fringe white, with some black basal suffusion following the terminal spots. Hind wing above white, with scattered black postmedial and terminal scaling, especially in the cubital field. Forewing beneath heavily infuscated, with two white subapical patches on costa, dark-fuscous reniform and orbicular spots; fringe irregularly white. Hind wing beneath white, weakly infuscated at apex; a fuscous dot in cell; an evenly curved postmedial row of black dots; a broken black terminal line. Expanse 14 to 18 mm.

Genitalia. As described for the genus.

Type. Lost.

Range. Southern Ontario to Florida and Texas.

Material Examined: Fifty-two specimens from: — Ontario: Point Pelee; Simcoe; Massachusetts: Barnstable; New York: Brooklyn; New Jersey: Westville; Oakland; Pennsylvania: Sinking Spring, Berks Co.; Virginia: Arlington; Tennessee: Smith Co.; Missouri: Lathrop; Oklahoma: Norman; Florida: Torreya State Park; Sarasota Co.; Texas: Georgetown; Brownsville.

Life History. Unknown.

Heliothelopsis, new genus

Type-species: *Aporodes arbutalis* Snellen

Frons rounded, slightly prominent; eye large; gena naked; vertex smooth-scaled; labial palpus obliquely upturned, closely and conically scaled; third joint long; maxillary palpus filiform, inconspicuous; body and legs robust; praeinctorium slender, with a rounded tuft of scales at tip. Forewing short and fairly wide; costa weakly curved; outer margin weakly curved, erect; R_1 from well before anterior angle of cell; R_2 from distinctly before angle; R_{3+4} from angle, free parts of R_3 and R_4 about as long as their stalk; R_5 from just behind angle of cell, straight and not approximated to R_{3+4}; M_1 from somewhat behind R_5; cell short; discocellular moderately curved; M_2, M_3 and Cu_1 from fairly close together at posterior angle of cell; Cu_2 from cell at three-fourths. Hind wing rounded; cell very short; Sc and R_s very briefly anastomosed; R_s briefly stalked with M_1; discocellular strongly and evenly curved, apex of cell acute; M_2, M_3 and Cu_1 from posterior angle, weakly approximated basally; Cu_2 from a little basad of posterior angle; three anals present.

Male Genitalia. Uncus ovate, laterally decurved and haired; gnathos strong; juxta bivalvate, prolonged into an anellus; valve broad and fluted; penis curved.

Female Genitalia. Not studied.

Key to the Species

1. Hind wing above with disc broadly yellow ..... *arbutalis* Snellen
   Hind wing above blackish fuscous 2
2. Forewing with a yellowish subapical mark on costa ..... *costipunctalis* Barnes and McDunnough
   Forewing without such a mark ..... *unicoloralis* Barnes and McDunnough

The relationships of the species require further study; more adequate material is greatly to be desired.

Heliothelopsis arbutalis (Snellen), new combination

Figs. 67, 160-162, 210.

Aporodes arbutalis Snellen, 1875: 190, Pl. 11, Fig. 2.
Panameria rhea Druce, 1894: 360, new synonymy.
Panemeria rhea, Druce, 1898: 490, Pl. 94, Fig. 23.
Noctuelia rhea, Barnes and Benjamin, 1924: 205.

Frons, vertex, palpi, antenna, thorax above and abdomen above dark brownish fuscous, abdominal terga bordered posteriorly with fuscous; body beneath fuscous, legs dull buff. Forewing above dark brownish fuscous, with somewhat lighter, greyish dusting, somewhat concentrated to form a faint subterminal band; fringe dark brownish fuscous. Hind wing above dark brownish fuscous, with an irregular dull-orange medial patch; fringe fuscous basally, dull grey distally. Forewing beneath fuscous, costal area powdered with buff, except for a preapical dark space; posterior margin also somewhat powdered with buff. Hind wing beneath with basal two-thirds dull orange powdered with fuscous, distal third fuscous. Expanse 10 mm.

Male Genitalia. Uncus ovate, bilobed, setose at sides, gnathos strong, triangular at base, slender and pointed distally; valve broad and fluted; penis curved, unarmed.

Types. Of *arbutalis*, lectotype, male, New Granada (Nolcken) selected by Munroe et al. (1958) in Leiden Museum; of *rhea*, holotype, male, Durango, Mexico, in British Museum (Natural History).

Range. Northern South America to Arizona.

Material Examined. No North American material studied. Two specimens recorded by Barnes and Benjamin (1924) from Baboquivari Mts., Pima Co., Arizona.

Life History. Unknown.

***Heliothelopsis costipunctalis* (Barnes and McDunnough), new combination**

Figs. 68, 163-165.

Heliothela costipunctalis Barnes and McDunnough, 1914: 244, Pl. 2, Fig. 14.
Noctuelia costipunctalis, Barnes and Benjamin, 1924: 206.
Noctuelia costipunctalis, McDunnough, 1939: 17.

Frons dark brownish fuscous, bordered anteriorly and at antenna with light grey; palpi light grey, third segment of labial palpus fuscous; proboscis pale grey at base; vertex and antenna fuscous; thorax fuscous above; thorax shining leaden grey below; legs light grey, with considerable fuscous scaling. Forewing above dark brownish fuscous, with sparse light-grey scaling; a yellowish dot at base, another behind costa at one-fourth; a yellow spot on costa at two-thirds; fringe dark brownish fuscous. Hind wing above dark fuscous; a pale-grey streak through cell Cu, from base to two-thirds, and another in anal area; fringe dark fuscous tipped with pale grey. Forewing beneath dull fuscous, yellow costal spot a little broader and more diffuse, area near posterior margin grey. Hind wing below dark fuscous, fringe as above. Expanse 15 mm.

Genitalia. Not studied.

Type. Holotype, ♀male, Kerrville, Texas, in United States National Museum.

Range. Texas; Arizona.

Material Examined. One specimen, without abdomen, from Arizona, no precise locality given.

Life History. Unknown.

***Heliothelopsis unicoloralis* (Barnes and McDunnough), new combination**

Figs. 69, 211.

Heliothela unicoloralis Barnes and McDunnough, 1914: 244, Pl. 2, Fig. 15.
Noctuelia unicoloralis, Barnes and Benjamin, 1924: 206.
Noctuelia unicoloralis, McDunnough, 1939: 17.

Frons blackish fuscous, pale grey anteriorly and anterolaterally and near antennal base; vertex and antenna dark fuscous; palpi buff, third joint of labial palpus fuscous and second joint with some blackish-fuscous scales; base of proboscis buff; antenna blackish fuscous; thorax above blackish fuscous; thorax beneath fuscous; legs pale buff, with extensive fuscous areas. Forewing above dark brownish fuscous, with sparse dusting of pale-grey scales, concentrated to form a weak postmedial patch and faint subterminal line; fringe dark fuscous. Hind wing above dark brownish fuscous, with faint pale-grey radial streaks from base into cell Cu, and into anal area; fringe fuscous, tipped with pale grey. Forewing beneath dark fuscous, with a diffuse pale spot on costa at three-fourths; area adjacent to posterior margin pale grey. Hind wing beneath dark fuscous. Fringes as above. Expanse 14 mm.

Male Genitalia. Uncus ovate, laterally decurved and setose; gnathos clavate, tapering to a sharp point; tegumen and vinculum of moderate width, juxta prolonged to an anellus; penis curved, moderately slender; valve rounded, strongly fluted.

Female Genitalia. Not studied.

Types. Three syntapes, Baboquivari Mts., Ariz., and S. Ariz., in United States National Museum. I select the specimen marked "Type ♂" as lectotype.

Range. Southern Arizona.

Material Examined. One male, 110°54'W, 32°1'N, Sta. Cruz Village, Cobabi Mts., Ariz.

Life History. Unknown.

Chlorobapta Barnes and McDunnough

Type-species: *Chlorobapta rufistrigalis* Barnes and McDunnough

Chlorobapta Barnes and McDunnough, 1914: 245.

Frons rounded, not prominent; labial palpus minute, porrect, hardly exceeding frons; maxillary palpus short, distally tufted with scales; antenna annulated and ciliated; proboscis obsolete. Forewing triangular, apex somewhat pointed; R_5 and M_1 from behind anterior angle of cell; R_3 and R_4 stalked, R_2 free. Hind wing with M_2 from well above M_3, parallel to it; discocellular oblique; M_1 from anterior angle of cell; Sc and R_s stalked. Middle and posterior tibiae with well-developed spurs of equal length.

I have not studied the genitalia and the placement of this genus is therefore tentative. Barnes and McDunnough associated it with *Noctuelia*. The general habitus suggests that placement in this subfamily is probably correct.

Chlorobapta rufistrigalis Barnes and McDunnough

Chlorobapta rufistrigalis Barnes and McDunnough, 1914: 245, Pl. 2, Fig. 17.

"Primaries pale lemon yellow overlying a dark ground color, which shows through in basal ⅔ of wing and narrowly along outer margin giving a general greenish tinge to wing; an oblique red-brown subterminal dash from vein 2 to anal angle subparallel to outer margin; fringes white. Secondaries pure white, slightly shaded with smoky at apex in ♀. Beneath primaries deep smoky, whitish at apex and inner margin; secondaries white. Expanse 15 mm.

"HABITAT. Pyramid Lake, Nevada (June 1-7). 1 ♂, 1 ♀. Types, Coll. Barnes" [now in United States National Museum]. I select the male as lectotype.

I have not studied this species, which so far as I know has not again been taken since the capture of the type lot.

Summary and Check List

Forty-nine North American species, of which the known ones were heretofore widely dispersed in the pyraustine list, are grouped in the subfamily Odontiinae Guenée = Titanioninae Marion, emend. Of these species, nine are described as new and 25 are assigned to new generic combinations. Seven additional subspecies are recognized, of which four are described as new, and two are assigned to new generic combinations. Three nominal species and one nominal subspecies are reduced to synonymy. Twenty-eight genera are recognized, of which 17 are described as new. The arrangement is summarized in the following check list.

Tribe Dichogamini

***Metrea* Grote**

1. ostreonalis Grote
   urticaloides (Fyles)

***Dichogama* Lederer**

2. redtenbacheri Lederer
3. amabilis Möschler

***Alatuncusia* Amsel**

4. bergi (Möschler), new combination

Tribe Odontiinae

***Microtheoris* Meyrick**

5. vibicalis (Zeller), new combination
6. ophionalis (Walker)
   a. ophionalis (Walker)
      sesquialteralis (Zeller), new combination and synonymy
      nasonialis (Zeller), new combination

b. lacustris Munroe, new subspecies
c. eremica Munroe, new subspecies
d. baboquivariensis Munroe, new subspecies
e. occidentalis Munroe, new subspecies

***Rhodocantha* Munroe, new genus**

7. diagonalis Munroe, new species

***Frechinia* Munroe, new genus**

8. murmuralis (Dyar), new combination
9. helianthiales (Murtfeldt), new combination
thyanalis (Druce), new combination
10. lutosalis (Barnes and McDunnough), new combination
11. laetalis (Barnes and McDunnough), new combination
12. criddlealis (Munroe), new combination
13. texanalis Munroe, new species

***Procymbopteryx* Munroe, new genus**

14. belialis (Druce), new combination

***Cymbopteryx* Munroe, new genus**

15. fuscimarginalis Munroe, new species
unilinealis (Barnes and McDunnough), new combination
phaeopasta (Hampson), new combination and synonymy

***Edia* Dyar**

17. semiluna (Smith)
bidentalis (Barnes and McDunnough)
microstagma Dyar
18. minutissima (Smith)
coolidgei Dyar

***Dichozoma* Munroe, new genus**

19. parvipicta (Barnes and McDunnough), new combination

***Cuneifrons* Munroe, new genus**

20. coloradensis Munroe, new species

***Gyros* Henry Edwards**

‡*Oribates* Henry Edwards
Monocona Warren
21. muirii (Henry Edwards)
rubralis (Warren)
22. atripennalis Barnes and McDunnough
23. powelli Munroe

***Anatralata* Munroe, new genus**

24. versicolor (Warren), new combination

***Metaxmeste* Hübner**

25. nubicola Munroe

***Pogonogenys* Munroe, new genus**

26. proximalis (Fernald), new combination
27. frechini Munroe, new species
28. masoni Munroe, new species

***Chrismania* Barnes and McDunnough**

29. pictipennalis Barnes and McDunnough

***Plumipalpia* Munroe, new genus**

30. martini Munroe, new species

***Nannobotys* Munroe, new genus**

31. commortalis (Grote), new combination
    minima (Dyar), new combination

***Porphyrorhegma* Munroe, new genus**

32. fortunata Munroe, new species

***Psammobotys* Munroe, new genus**

33. fordi Munroe, new species

***Mimoschinia* Warren**

34. *rufofascialis (Stephens), new combination
    fascialis (Stephens), new combination
    thalialis (Walker)
    perviana (Walker)
    gelidalis (Walker)
    costaemaculalis (Snellen)
    a. novalis (Grote), new combination
    b. decorata (Druce), new combination
    c. nuchalis (Grote)

***Jativa* Munroe, new genus**

35. castanealis (Hulst), new combination
    jativa (Barnes), new combination

***Pseudoschinia* Munroe, new genus**

36. elautalis (Grote), new combination
    magnalis (Hulst), new combination

***Noctueliopsis* Munroe, new genus**

37. puertalis (Barnes and McDunnough), new combination
38. palmalis (Barnes and McDunnough), new combination
39. atascaderalis (Munroe), new combination
40. aridalis (Barnes and McDunnough), new combination
41. pandoralis (Barnes and McDunnough), new combination
42. bububattalis (Hulst), new combination
    tectalis (Barnes and McDunnough), new combination
43. virula (Barnes and McDunnough), new combination

***Mojavia* Munroe, new genus**

44. achemonalis (Barnes and McDunnough), new combination
    pulcharalis (Barnes and Benjamin), new combination and synonymy

***Eustixia* Hübner**

Thelcteria Lederer

45. pupula Hübner

***Heliothelopsis* Munroe, new genus**

46. arbutalis (Snellen), new combination
    rhea (Druce), new combination and synonymy
47. costipunctalis (Barnes and McDunnough), new combination
48. unicoloralis (Barnes and McDunnough), new combination

***Chlorobapta* Barnes and McDunnough**

49. rufistrigalis Barnes and McDunnough

Acknowledgments

I wish to thank those who have kindly lent material and otherwise assisted in this study. Mr. Lloyd M. Martin, Los Angeles County Museum, Los Angeles, Calif.; Mr. R. A. Ford, South Gate, Calif.; Mr. Hugh B. Leech, California Academy

of Sciences, San Francisco; Mr. J. A. Powell, University of California, Berkeley; Mr. Harry K. Clench, Carnegie Museum, Pittsburgh, Pa.; Dr. Frederick H. Rindge and Dr. A. B. Klots, American Museum of Natural History, New York, N.Y., all were generous in lending and/ or exchanging material. Mr. Don Frechin, Bremerton, Washington, made available excellent material collected by himself and the late E. C. Johnston of Seattle; the late John L. Sperry donated extensive and most valuable material. My colleagues D. F. Hardwick, W. R. M. Mason, W.R. Richards and J.E.H. Martin made particularly fine collections of this group during their expedition to the Mojave Desert in 1955. The authorities of the British Museum (Natural History), of the United States National Museum, of the American Museum of Natural History, and of Rutgers University kindly permitted me to examine types. The drawings were made by Mrs. Marie Spencer.

References

Amsel, H. G. 1956. Microlepidoptera Venezolana. I. *Bol. Ent. Venez.* 10: 1-336.

Barnes, W. 1905. New species of North American Lepidoptera. *Can. Ent.* 37: 213-216.

Barnes, W., and F. H. Benjamin. 1922. Notes: new genera and species. *Contr. Nat. Hist. Lep. N. Am.* 5: 41-49.

Barnes, W., and F. H. Benjamin. 1924. Notes on the genus *Noctuelia* (Lepidoptera: Pyralidae). *Proc. Ent. Soc. Wash.* 26: 205-206.

Barnes, W., and J. McDunnough. 1912. New Microlepidoptera. *Ent. News* 23: 219-220.

Barnes, W., and J. McDunnough. 1914. Synonymic notes on North American Lepidoptera. *Contr. Nat. Hist. Lep. N. Am.* 2: 198-223.

Barnes, W., and J. McDunnough. 1914a. Some new North American Pyraustinae. *Contr. Nat. Hist. Lep. N. Am.* 2: 224-250, Pl. 1, 2.

Barnes, W., and J. McDunnough. 1916. Synonymic notes on North American Heterocera. *Contr. Nat. Hist. Lep. N. Am.* 3: 157-208, Pl. 12-15.

Barnes, W., and J. McDunnough. 1917. Check list of the Lepidoptera of Boreal America x + 392 pp. Decatur, Illinois.

Barnes, W., and J. McDunnough. 1918. Notes and new species. *Contr. Nat. Hist. Lep. N. Am.* 4: 61-208, Pl. 11-25.

Druce, H. 1894. Descriptions of some new species of Heterocera from Central America. *Ann. Mag. Nat. Hist.* (6) 13: 352-363.

Druce, H. 1898. Biologia Centrali-Americana. Insecta. Lepidoptera Heterocera. Vol. II, signature 3 rr.

Druce, H. 1899. *Ibid.*, signature 4bb.

Dyar, H. G. 1901. Descriptions of some pyralid larvae from southern Florida. *J. New York Ent. Soc.* 9: 19-24.

Dyar, H. G. 1902. Descriptions of the larvae of some moths from Colorado. *Proc. U.S. Natl. Mus.* 25: 369-412.

Dyar, H. G. 1913. Descriptions of new Lepidoptera, chiefly from Mexico. *Proc. U.S. Natl. Mus.* 44: 279-324.

Dyar, H. G. 1914. Descriptions of new species and genera of Lepidoptera from Mexico. *Proc. U.S. Natl. Mus.* 47: 365-409.

Dyar, H. G. 1917. Notes on North American Pyraustinae (Lepidoptera, Pyralidae). *Ins. Insc. Mens.* 5: 69-75.

Dyar, H. G. 1917a. A new pyralid from California (Lepidoptera, Pyralidae). *Ins. Insc. Mens.* 5: 132.

Dyar, H. G. 1921. New American Lepidoptera and records. *Ins. Insc. Mens.* 9: 137-145.

Edwards, Hy. 1881. New genera and species of North American Noctuidae. *Papilio* 1: 19-28.

Edwards, Hy. 1881a. Descriptions of some new species of Heterocera. *Papilio* 1: 115-121.

Edwards, Hy. 1886. Apparently new forms of North American Heterocera. *Ent. Am.* 2: 165-171.

Fernald, C. H. 1894. Descriptions of Pyralidae from the Death Valley. *Insect Life* 6: 255-257.

Fernald, C. H. 1902. Family Pyralidae, subfamily Pyraustinae. *In* A list of North American Lepidoptera. *U.S. Natl. Mus. Bull.* 52: 371-395.

Forbes, W. T. M. 1923. The Lepidoptera of New York and neighboring states. Primitive forms. *Cornell Univ. Agr. Exp. Sta. Mem.* 68: 1-729.

Fyles, T. W. 1894. *Botys urticaloides*, n.s. *Can. Ent.* 26: 184.
Grote, A. R. 1876. New Pyralides. *Can. Ent.* 8: 156-158.
Grote, A. R. 1878. Preliminary studies on the North American Pyralidae. *Bull. U.S. Geol. Geogr. Surv. Terr.* 4: 669-705.
Grote, A. R. 1881. New moths from Arizona, with remarks on *Catocala* and *Heliothis*. *Papilio* 1: 153-168.
Grote, A. R. 1881a. New moths, chiefly from Arizona. *Can. Ent.* 13: 229-233.
Grote, A. R. 1882. On certain Pyralidae. *Papilio* 2: 72-74.
Guenée, A. 1854. Species général des lépidoptères. Tome huitième. Deltoides et Pyralites. Paris.
Hampson, Sir G. F. 1898. A revision of the moths of the subfamily Pyraustinae and family Pyralidae. Part 1. *Proc. Zool. Soc. London*, 1898, pp. 590-761.
Hampson, Sir G. F. 1899. A revision of the moths of the subfamily Pyraustinae and family Pyralidae. Part 2. *Proc. Zool. Soc. London*, 1899, pp. 172-291.
Hampson, Sir G. F. 1900. Notes on a few North American species listed as Noctuidae. *Ent. News* 11: 509.
Hampson, Sir G. F. 1918. Descriptions of new Pyralidae of the subfamily Pyraustinae. *Ann. Mag. Nat. Hist.* (9) 1: 265-280.
Hampson, Sir G. F. 1919. Descriptions of new Pyralidae of the subfamilies Crambinae and Siginae. *Ann. Mag. Nat. Hist.* (9) 4: 305-326.
Haworth, A. H. 1803. Lepidoptera Britannica. pp. xxxvi + 609. London.
Heinrich, C. 1921. Some Lepidoptera likely to be confused with the pink bollworm. *J. Agr. Res.* 20: 807-836, Pl. 93-109.
Hübner, J. 1823. Zuträge zur Sammlung exotischer Schmettlinge. Vol. 2, text. 40 pp. Augsburg.
Hübner, J. 1825. Verzeichniss bekannter Schmettlinge. Signature 22. Augsburg.
Hulst, G. D. 1886. Descriptions of new Pyralidae. *Trans. Amer. Ent. Soc.* 13: 145-168.
Klots, A. B. 1942. Type material of North American Microlepidoptera other than Aegeriidae in the American Museum of Natural History. *Bull. Amer. Mus. Natl. Hist.* 79: 391-424.
Lederer, J. 1863. Beitrag zur Kenntniss der Pyralidinen. *Wiener Ent. Monatschr.* 7: 331-502, Pl. 2-18.
Leech, H. B. 1949. The occurrence of a hollyhock-seed eater, *Noctuel'a rufofascialis* at Vernon, British Columbia (Lepidoptera: Pyralidae). *Proc. Ent. Soc. British Columbia* 45: 25-26, Figs. 1, 2.
Marion, H. 1952. Ebauche d'une classification nouvelle des Pyraustidae. *Rev. Français de Lépid.* 13: 260-270.
McDunnough, J. 1931. Note on the larvae of *Metrea ostreonalis* (Pyraustinae, Lepid.). *Can. Ent.* 63: 50.
McDunnough, J. 1939. Check list of the Lepidoptera of Canada and the United States of America. Part 2. Microlepidoptera. *Mem. S. California Acad. Sci.* 2: 1-171.
Meyrick, E. B. 1932. Pyraustidae. *Exot. Microlep.* 4: 240-245.
Möschler, H. B. 1891. Die Lepidopteren-Fauna der Insel Portorico. *Abh. Senckenb. Naturf. Ges.* 16: 69-299, 1 pl.
Müller-Rutz, J. 1929. Die Subfamilie Pyraustinae (Lep.) *Mitt. Schweiz. Ent. Ges.* 14: 182-190, Figs. 1-15, Pl. 3-6.
Munroe, E. G. 1951. North American Pyraustinae — notes and descriptions (Lepidoptera: Pyralidae). *Can. Ent.* 83: 161-169. Figs. 1-14, Pl. 1.
Munroe, E. G. 1954. A new pyralid of Palaearctic affinities from Colorado (Lepidoptera). *Can. Ent.* 86: 499-500, Figs. 1-3.
Munroe, E. G. 1956. Pyralides récoltés à l'île de la Guadeloupe par M. L. Berland. *Rev. Franç. d'Ent.* 23: 121-127, Figs. 1-4.
Munroe, E. G. 1958. Hampson's Schoenobiinae (Lepidoptera: Pyralidae). *Proc. Tenth Int. Congr. Ent.* 1: 301-302.
Munroe, E. G. 1958a. The geographic distribution of the Scopariinae. *Proc. Tenth Intern. Congr. Ent.* 1: 831-837.
Munroe, E. G. 1959. Pyralidae collected in Lower California by Mr. J. Powell (Lepidoptera). *Can. Ent.* 91: 725-727, Figs. 1-4.
Munroe, E. G., A. Diakonoff, and E. L. Martin. 1958. Catalogue of Snellen's types of Pyralidae, with selections of lectotypes. *Tijd. v. Ent.* 101: 65-88.
Murtfeldt, Mary E. 1897. A new pyralid. *Can. Ent.* 29: 71-72.

Rindge, F. H. 1955. The type material in the J. B. Smith and G. D. Hulst collections of Lepidoptera in the American Museum of Natural History. *Bull. Amer. Mus. Nat. Hist.* 106: 91-172.

Smith, J. B. 1893. Catalogue of the lepidopterous superfamily Noctuidae found in Boreal America. *U.S. Natl. Mus. Bull.* 44: 1-424.

Smith, J. B. 1905. New Noctuidae for 1905 — No. 1. *Can. Ent.* 37: 65-71.

Smith, J. B. 1906. New species of Noctuidae for 1906. No. 2. *Can. Ent.* 38: 225-238.

Snellen, P. C. T. 1875. Opgave der Geometrina en Pyralidina in Nieuw Granada en op St. Thomas en Jamaica verzameld door W. Baron von Nolcken. Tweede Afdeeling: Pyralidina. *Tijd. v. Ent.* 18: 187-264, Pl. 11-14.

Snellen, P. C. T. 1887. Bijdrage tot de kennis der Lepidoptera van het eiland Curacao. *Tijd. v. Ent.* 30: 9-66, Pl. 1-5.

Stephens, J. F. 1829. A systematic catalogue of British insects, Part II. pp. 1-388. London.

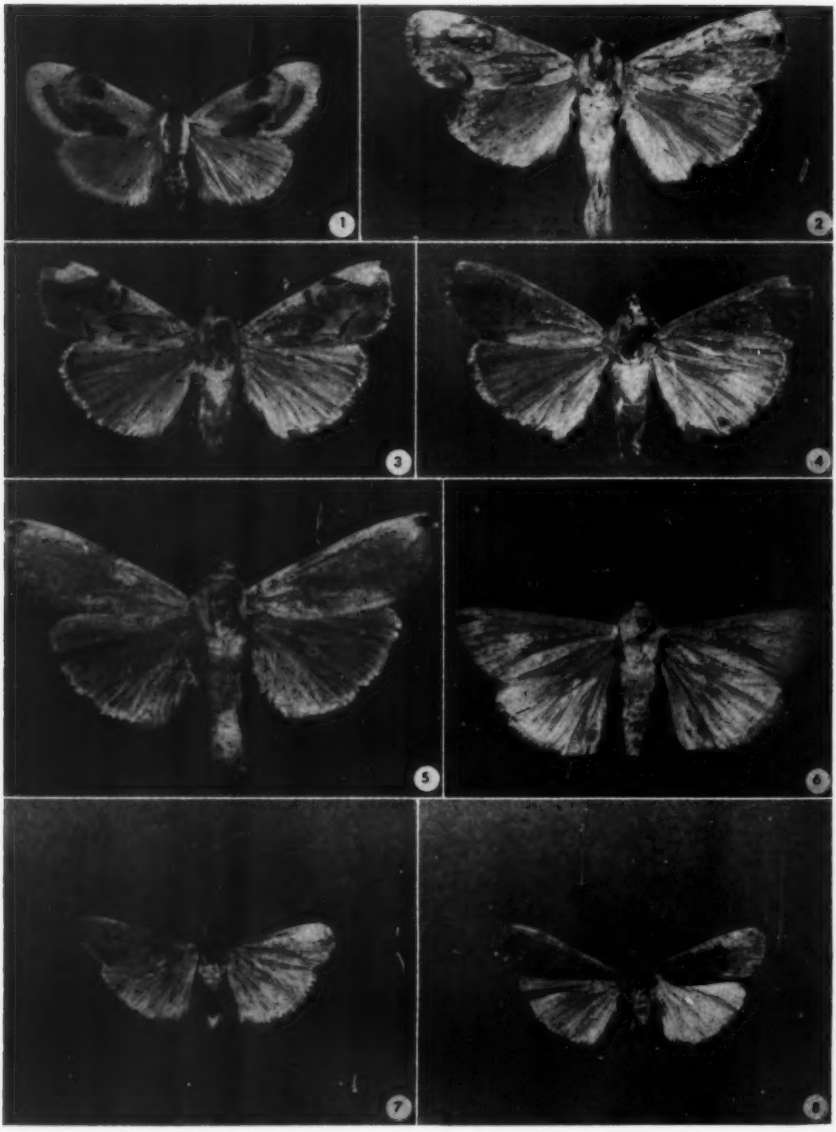
Stephens, J. F. 1834. Illustrations of British entomology. Haustellata. Vol. 4, pp. 1-433, Pl. 33-41. London.

Walker, F. 1859. List of the specimens of lepidopterous insects in the collection of the British Museum. Parts 17, 18, Pyralides. pp. 255-798. London.

Walker, F. 1865. Ibid. Parts 33, 34, Supplement. pp. 708-1533. London.

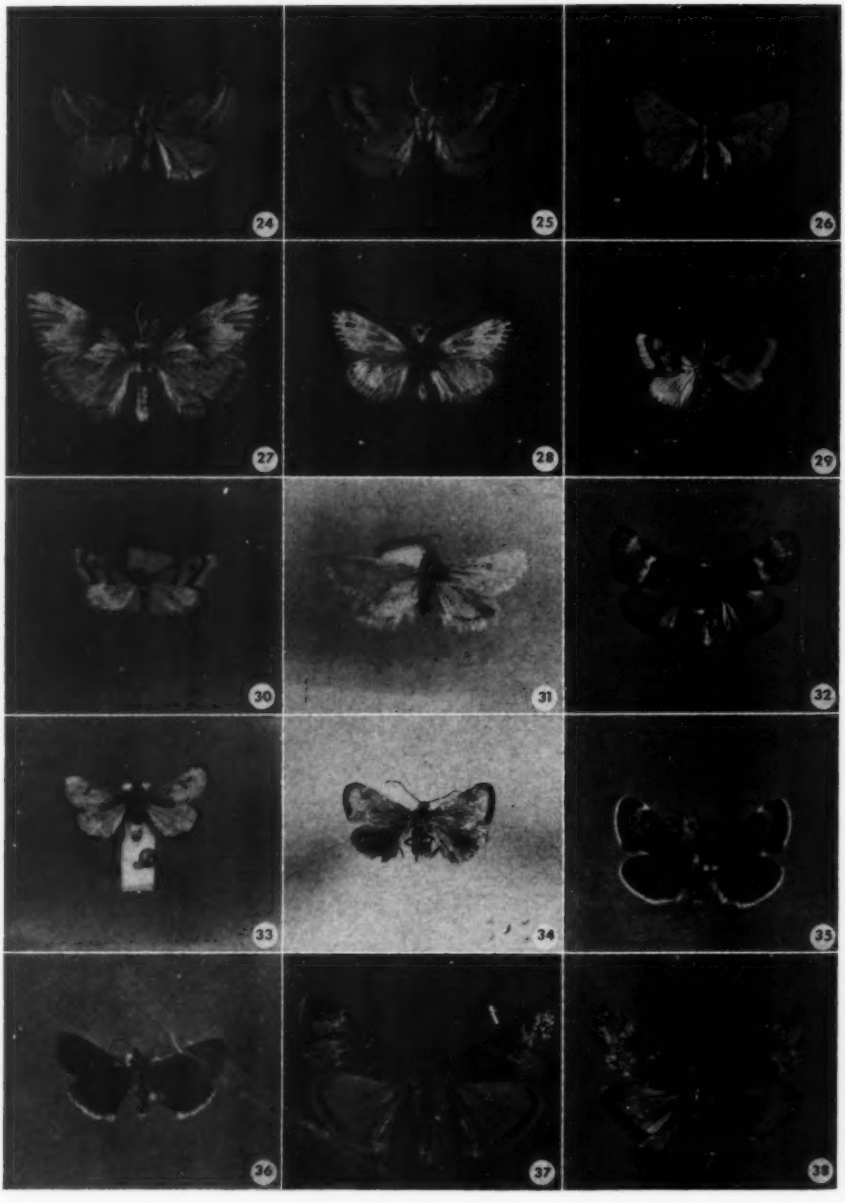
Warren, W. 1892. Descriptions of new genera and species of Pyralidae contained in the British Museum collection. *Ann. Mag. Nat. Hist.* (6) 9: 172-302, 389-442.

Zeller, P. C. 1873. Beiträge zur Kenntniss der nordamericanischen Nachtfalter, besonders der Microlepidopteren. Zweite Abtheilung. *Verh. K.-K. Zool.-Bot. Ges. Wien* 23: 203-334, Pl. 3, 4.

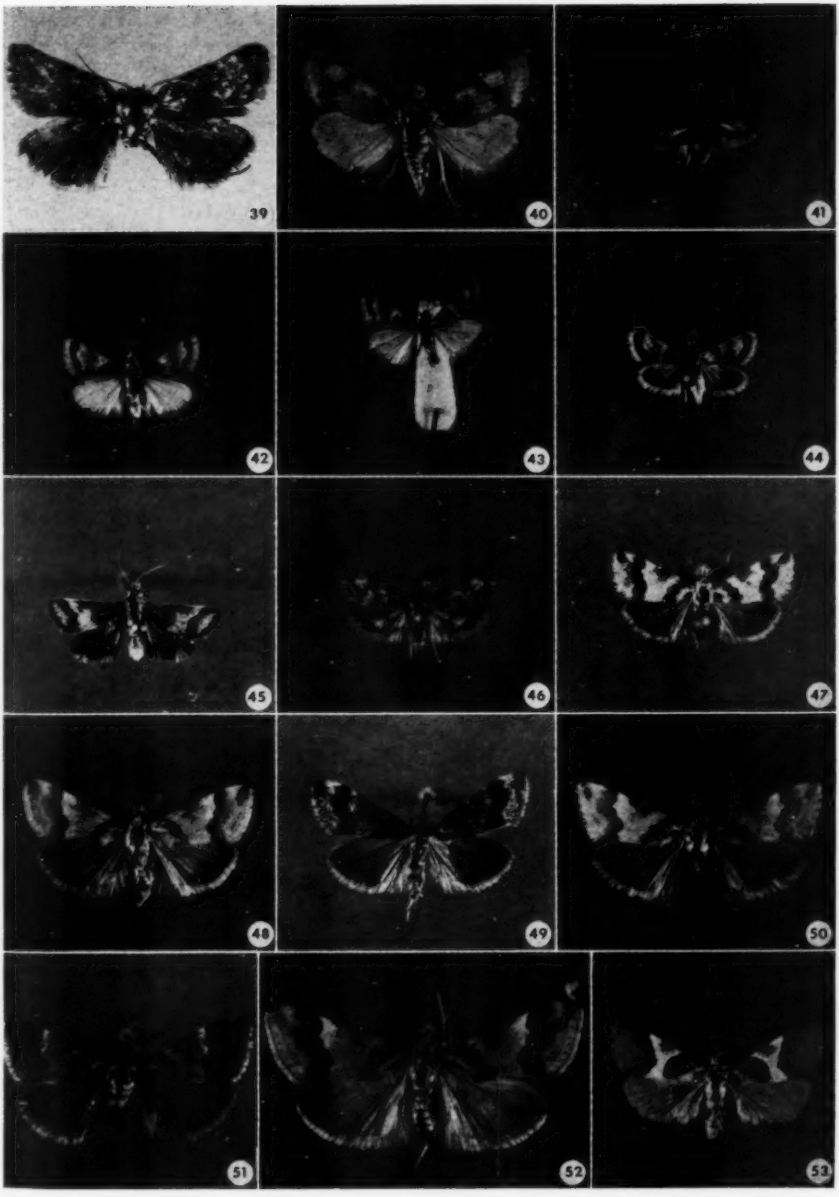


Figs. 1-8. 1, *Metrea ostreonalis* Grote, ♂; 2-4, *Dichogama redtenbacheri* Lederer, 2, ♂, 3, 4, ♀♀; 5, 6, *D. amabilis* Möschler, ♂, ♀; 7, 8, *Alatuncusia bergii* Möschler, ♂, ♀.

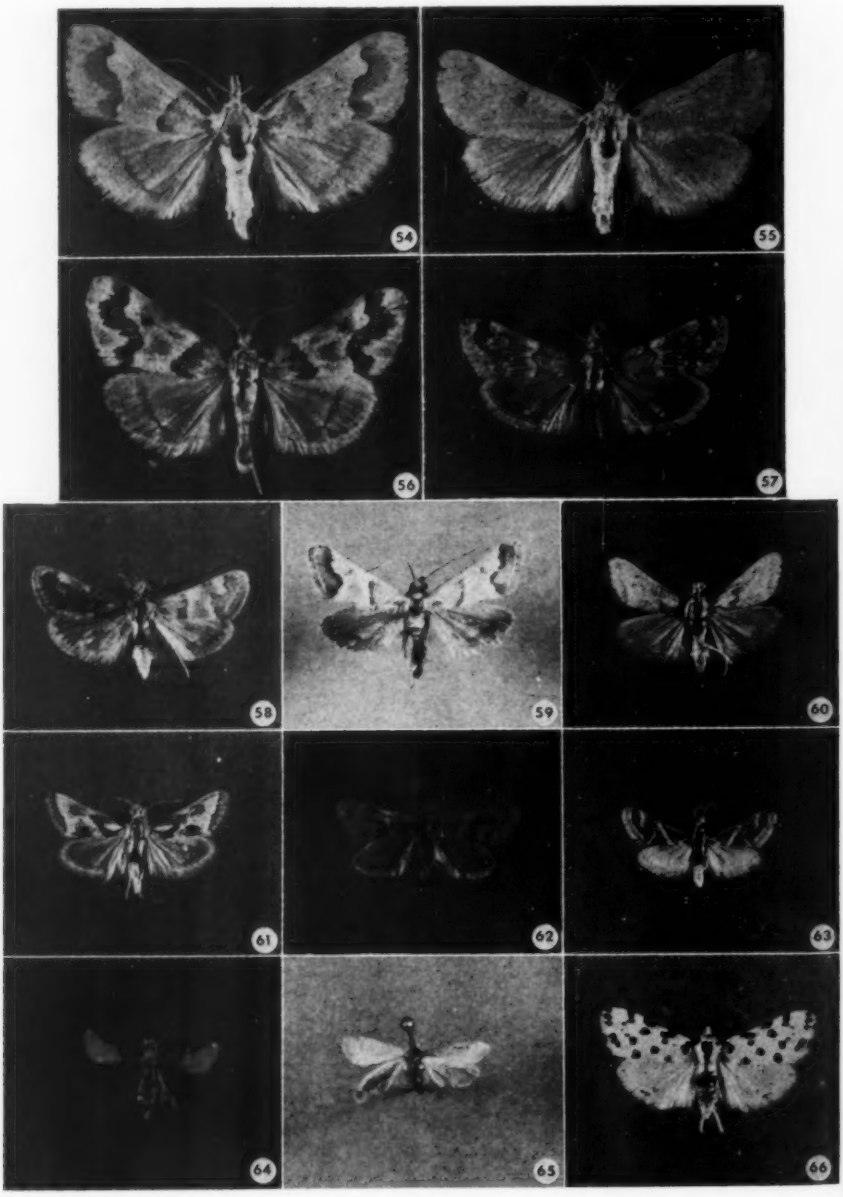
Figs. 9-23. 9, *Microtheoris vibicalis* (Zeller), ♂; 10, 11, *M. ophionalis ophionalis* (Walker), ♂; 12, *Microtheoris ophionalis lacustris*, n. ssp., ♂; 13, *M. o. eremica*, n. ssp., ♂; 14, *M. o. baboquivariensis*, n. ssp., ♀; 15, 16, *M. o. occidentalis*, n. ssp., ♀, ♂; 17, *Rhodocantha diagonalis*, n. sp., ♂; 18, *Frechinia helianthiales* (Murtfeldt), ♂; 19, *F. lutosalis* (Barnes and McDunnough), ♂; 20, *F. laetalis* (Barnes and McDunnough), ♂; 21, 22, *F. criddlealis* (Munroe), ♀, ♂; 23, *F. texanalis*, n. sp., ♀.



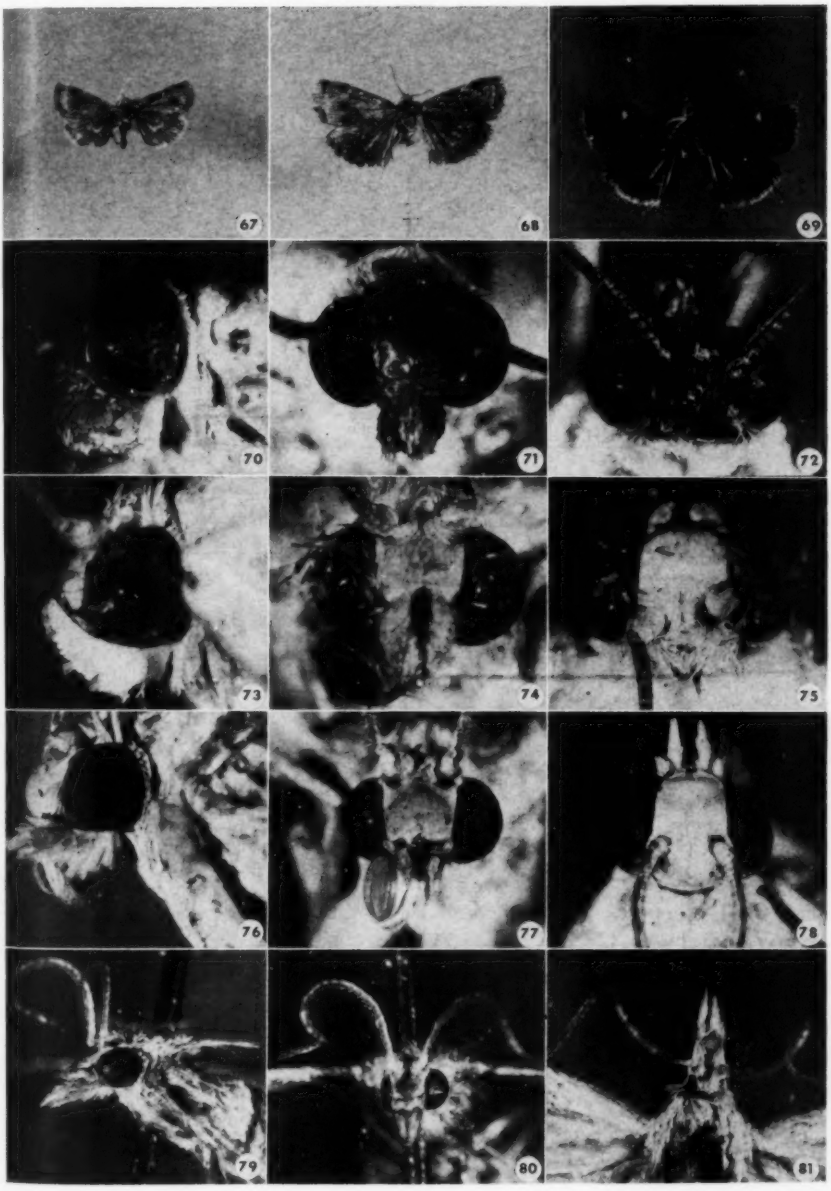
Figs. 24-38. 24, *Procymbopteryx belialis* (Druce), ♂; 25, *Cymbopteryx fuscimarginalis*, n. sp., ♂; 26, *C. unilinealis* (Barnes and McDunnough) ♂; 27, *Edia semiluna* (Smith), ♂; 28,*Edia minutissima* (Smith) ♂; 29, 30, *Dichozoma parvipicta* (Barnes and McDunnough), ♂, ♀; 31, *Cuneifrons coloradensis*, n. sp., ♂; 32, *Gyros muirii* (Henry Edwards), ♂; 33, *G. powelli* Munroe, ♂; 34-36, *Anatralata versicolor* (Warren), ♀, ♂; 37, *Pogonogenys proximalis* (Fernald), ♂; 38, *P. frechini*, n. sp., ♂.



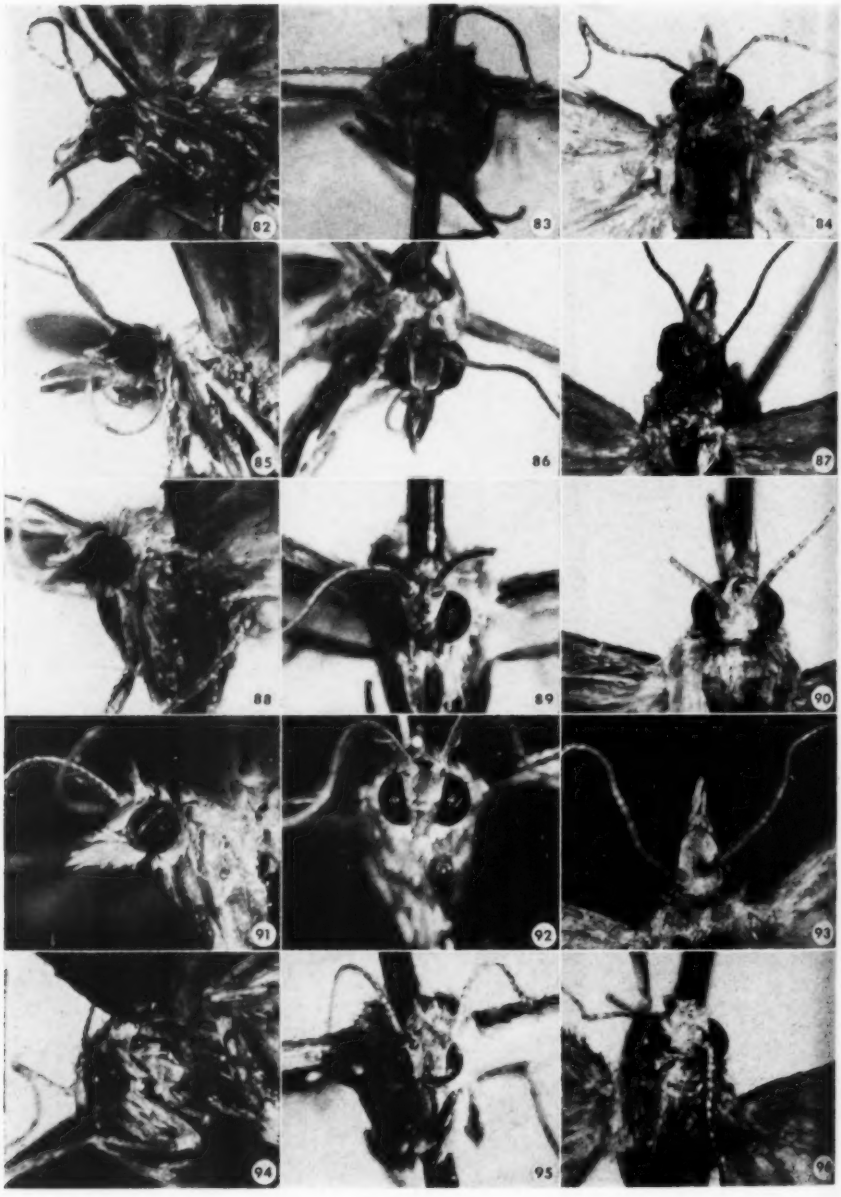
Figs. 39-53. 39, *Metaxmeste rubicola* Munroe, ♂; 40, *Chrismania pictipennalis* (Barnes and McDunnough), ♀; 41, *Plumipalpia martini*, n. sp., ♂; 42-44, *Nannobotys commortalis* (Grote); 45, *Porphyrorhegma fortunata*, n. sp., ♂; 46, *Psammobotys fordi*, n. sp., ♂; 47, *Mimoschinia rufofascialis decorata* (Druce), ♂; 48-51, *M. r. novalis* (Grote); 52, *M. r. nuchalis* (Grote), ♀; 53, *Jativa castanealis* (Hulst), ♂.



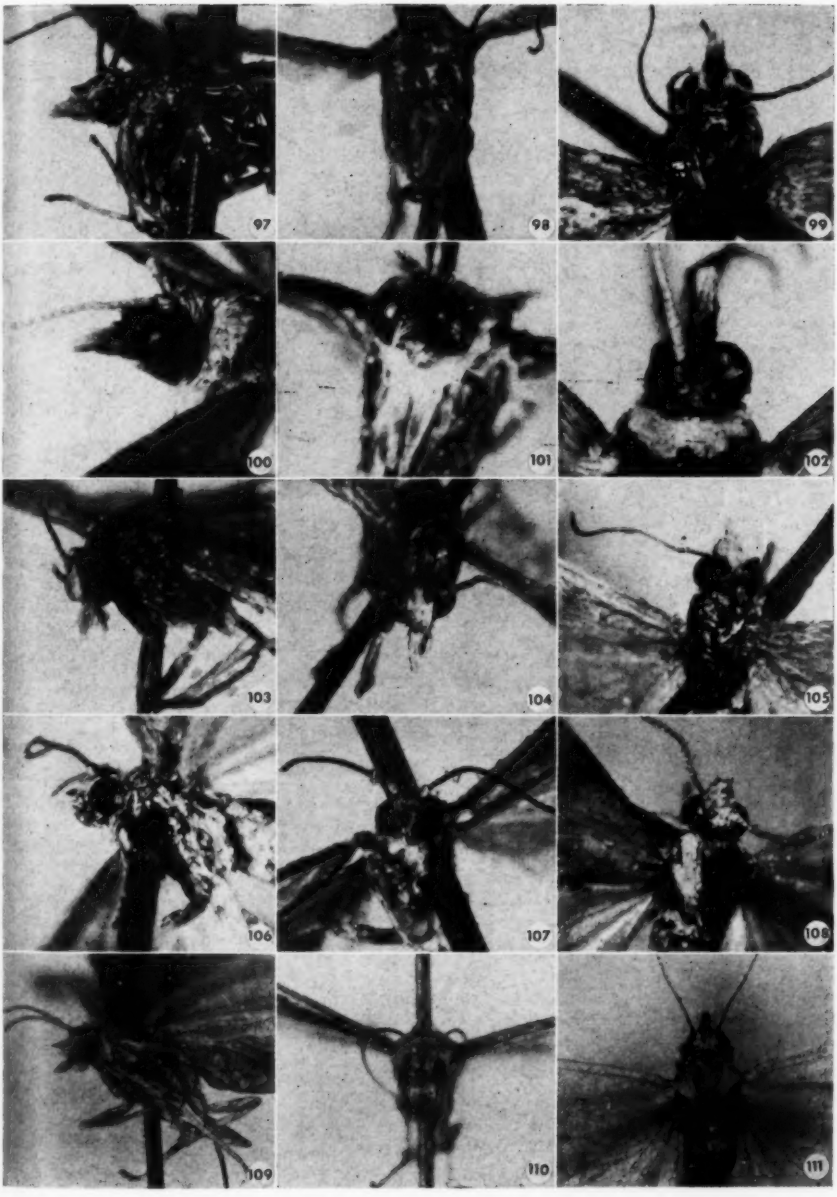
Figs. 54-66. 54-56, *Pseudoschinia elautalis* (Grote); 57, *Noctueliopsis puertalis* (Barnes and McDunnough); 58, *N. palmalis* (Barnes and McDunnough); 59, *N. atascaderalis* (Munroe) ♂; 60, 61, *N. aridalis* (Barnes and Benjamin); 62, *N. bububattalis* (Hulst), ♂; 63, *N. virula* (Barnes and McDunnough), ♂; 64, 65, *Mojavia achemonalis* (Barnes and McDunnough); 66, *Eustixia pupula* Hübner, ♀.



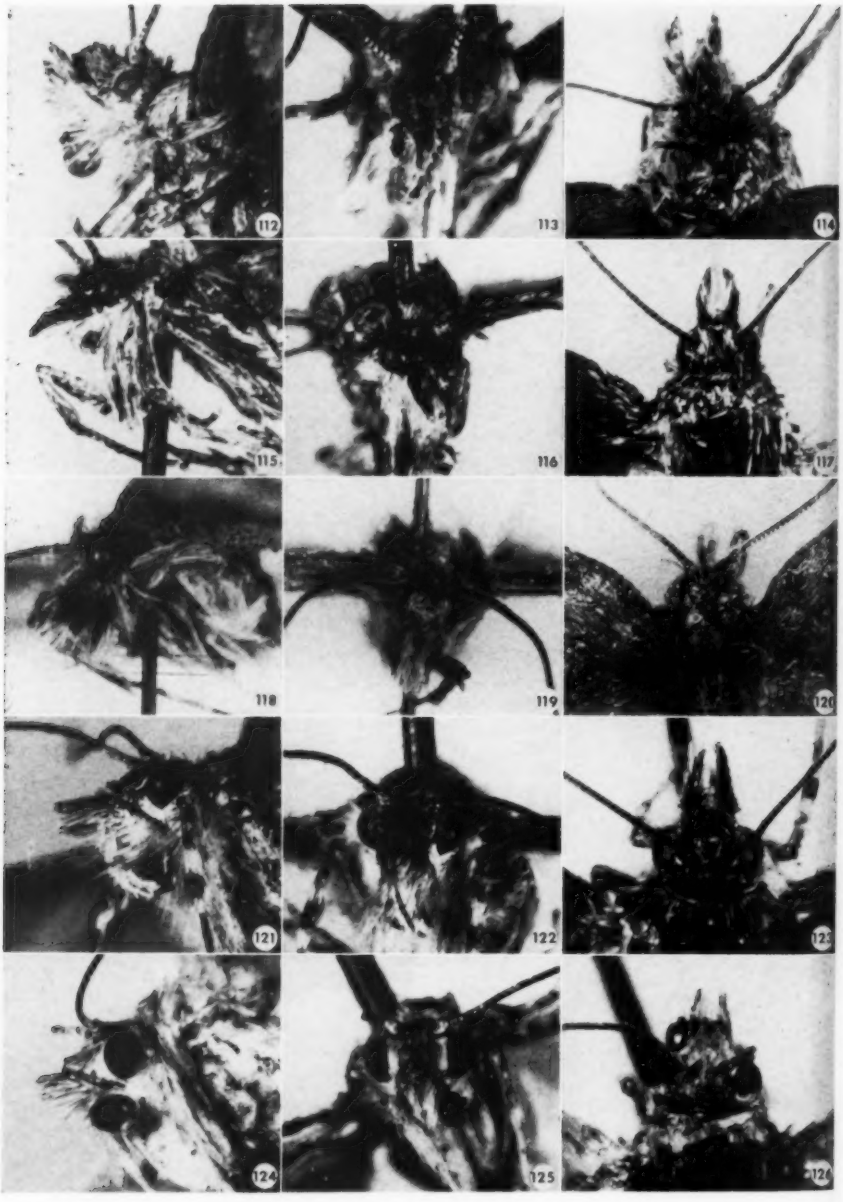
Figs. 67-81. 67, *Heliothelopsis arbutalis* (Snellen), ♂; 68, *H. costipunctalis* (Barnes and McDunnough); 69, *H. unicoloralis* (Barnes and McDunnough), ♂; 70-81, heads, lateral, anterior and dorsal aspects: 70-72, *Metrea ostreonalis* Grote; 73-75, *Dichogama redtenbacheri* Lederer; 76-78, *Alatuncusia bergii* (Möschler); 79-81 *Microtheoris vibicalis* (Zeller).



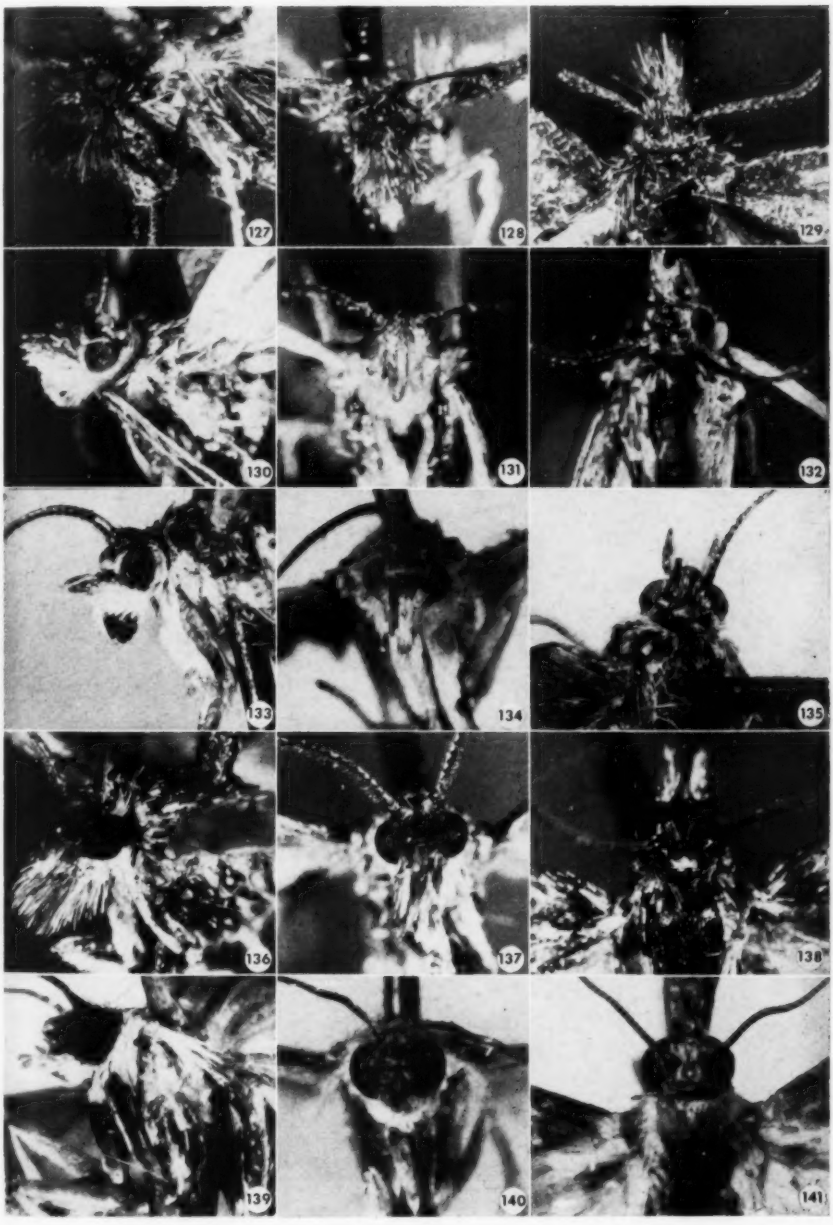
Figs. 82-96. Heads, lateral, anterior, and dorsal aspects: 82-84, *Microtheoris ophionalis* (Walker); 85-87, *Rhodocantha diagonalis* Munroe; 88-90, *Frechinia helianthiales* (Murtfeldt); 91-93, *Procymbopteryx belialis* (Druce); 94-96, *Cymbopteryx fuscimarginalis* Munroe.



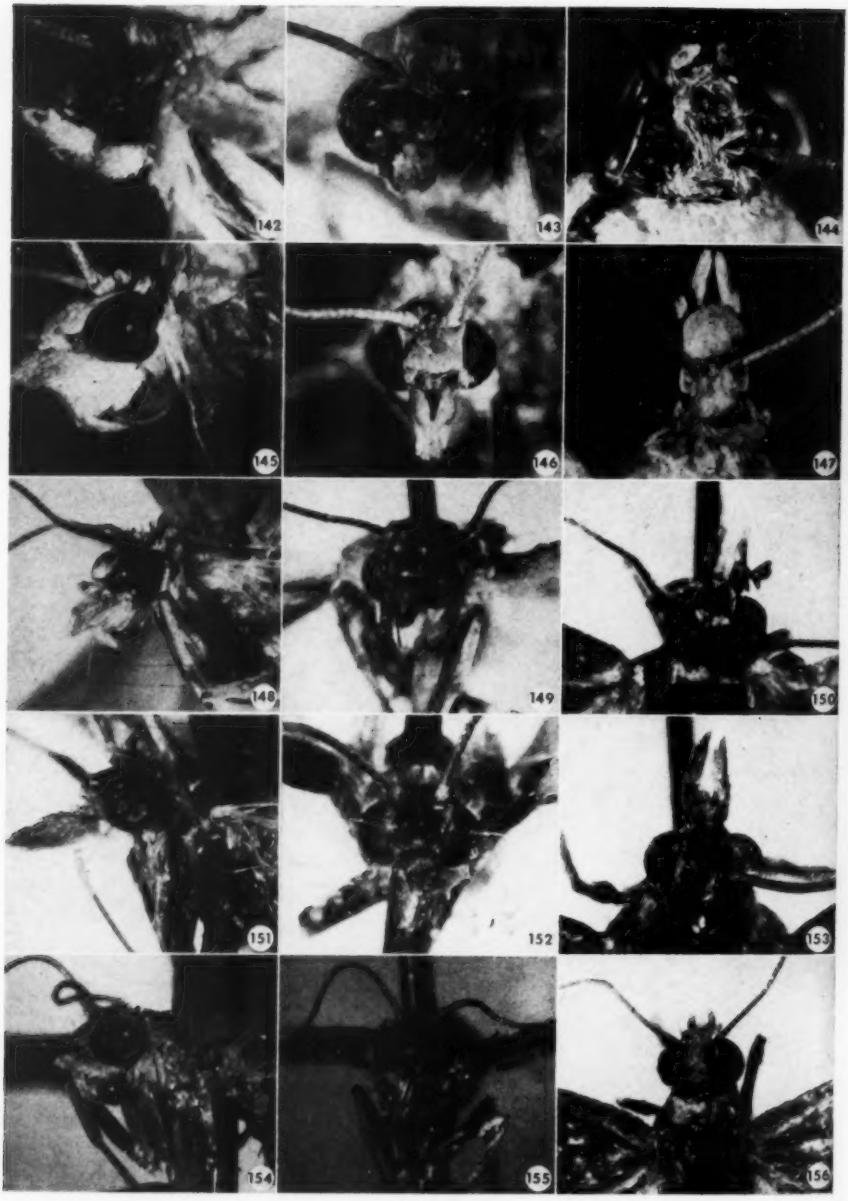
Figs. 97-111. Heads, lateral, anterior, and dorsal aspects. 97-99, *Cymbopteryx unilinealis* (Barnes and McDunnough); 100-102, *Edia semiluna* (Smith); 103-105, *E. minutissima* (Smith); 106-108, *Dichozoma parvipicta*, n. sp.; 109-111, *Cuneifrons coloradensis*, n. sp.



Figs. 112-126. Heads, lateral, anterior, and dorsal aspects. 112-114, *Gyros muirii* (Hy. Edwards); 115-117, *Anatralata versicolor* (Warren); 118-120, *Metaxmeste phrygialis* (Hübner); 121-123, *Pogonogenys proximalis* (Fernald); 124-126, *Chrismania pictipennalis* Barnes and McDunnough.

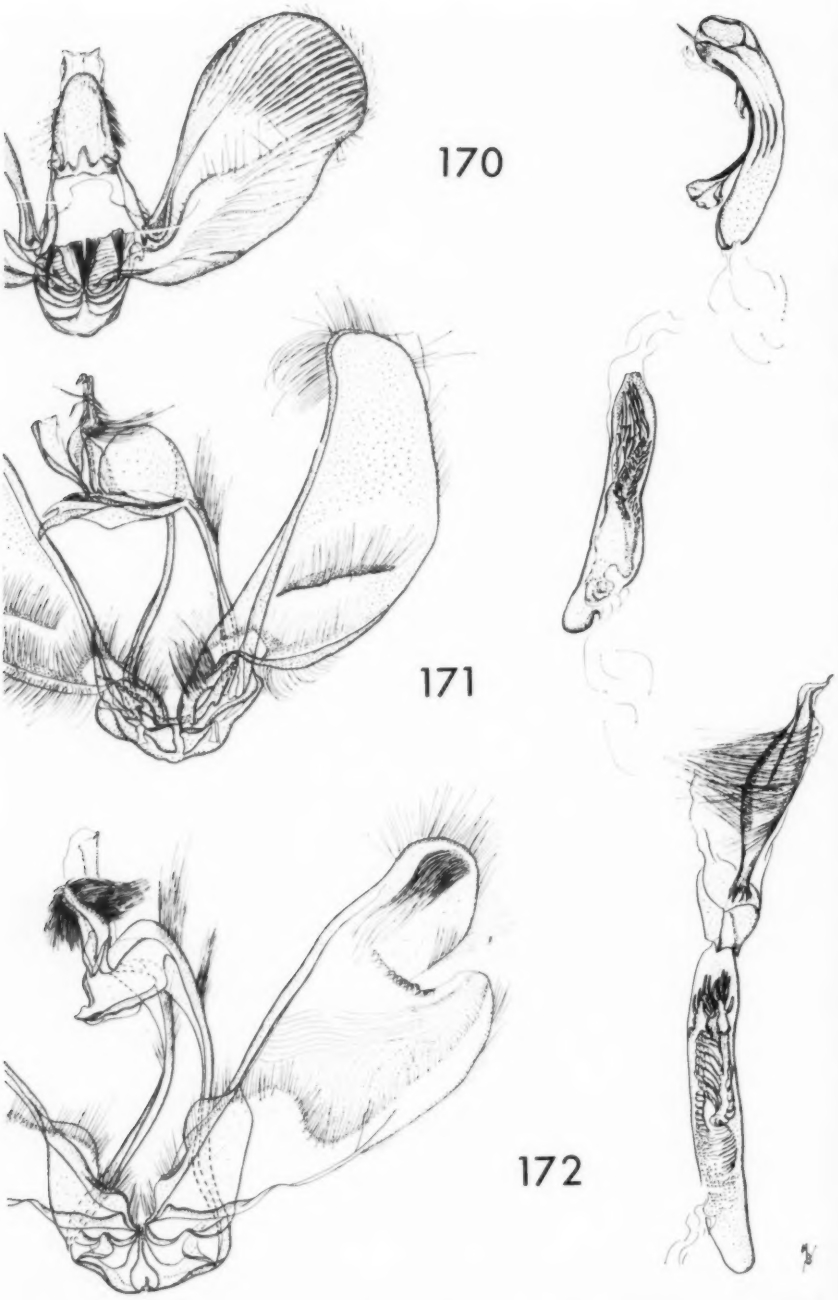


Figs. 127-141. Heads, lateral, anterior, and dorsal aspects. 127-129, *Plumipalpia martini*, n. sp; 130-132, *Nannobotys commortalis* (Grote); 133-135, *Porphyrorhegma fortunata*, n. sp.; 136-138, *Psammobotys fordi*, n. sp.; 139-141, *Mimoschinia rufofascialis* (Stephens).



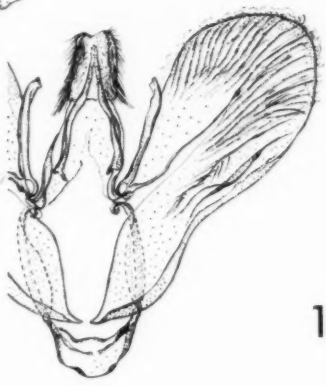
Figs. 142-156. Heads, lateral, anterior, and dorsal aspects. 142-144, *Pseudoschinia elautalis* (Grote); 145-147, *Noctueliopsis puertalis* (Barnes and McDunnough); 148-150, *N. palmalis* (Barnes and McDunnough); 151-153, *N. atascaderalis* (Munroe); 154-156, *Mojavia achemonalis* (Barnes and McDunnough).

Figs. 157-169. 157-168, heads, lateral, anterior and dorsal aspects: 157-159, *Eustixia pupula* Hübner; 160-162, *Heliothelopsis arbutalis* (Snellen); 163-165, *H. costipunctalis* (Barnes and McDunnough); 166-168, *Jativa castanealis* (Hulst). 169, *Pogonogenys masoni*, n. sp.



Figs. 170-172. Male genitalia: 170, *Metrea ostreonalis* (Grote); 171, *Dichogama redtenbacheri* Lederer; 172, *D. amabilis* (Möschler).

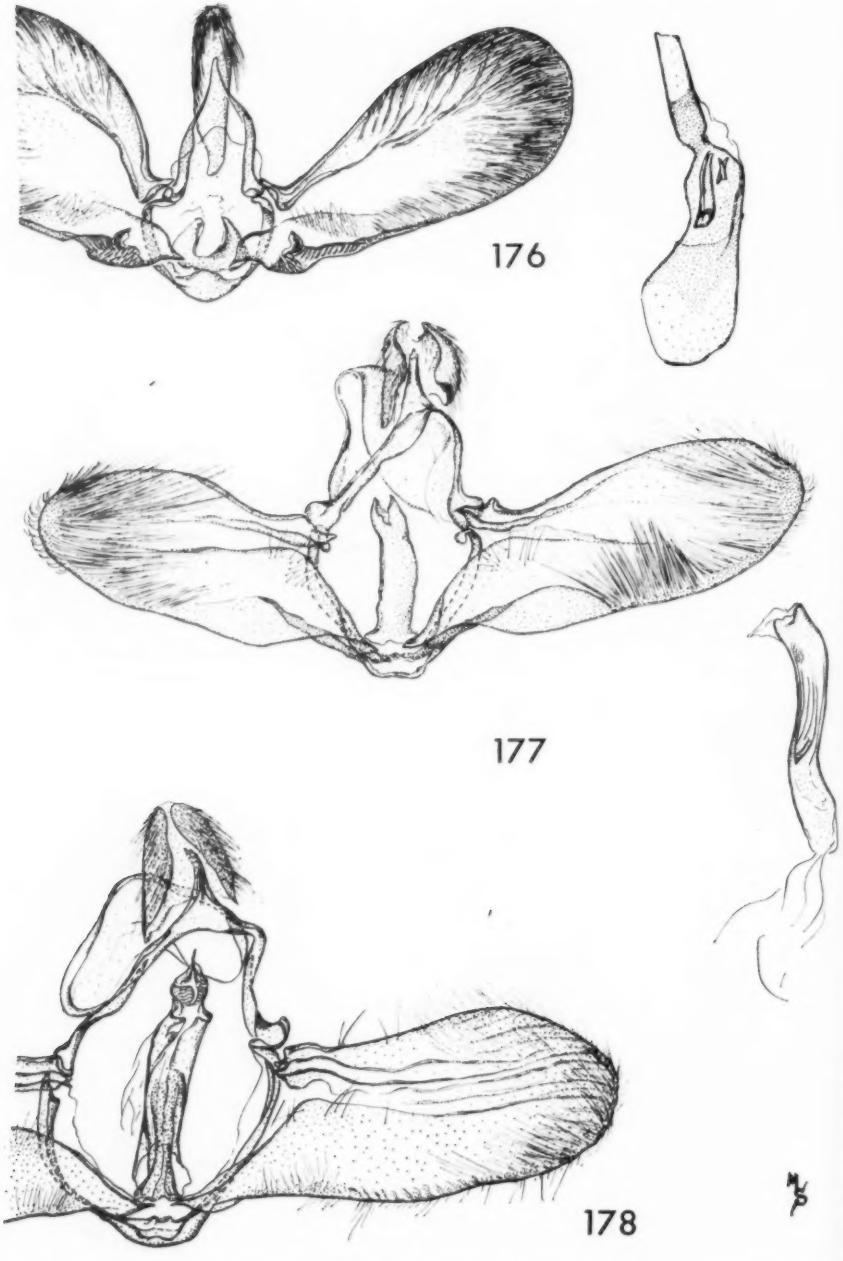
173



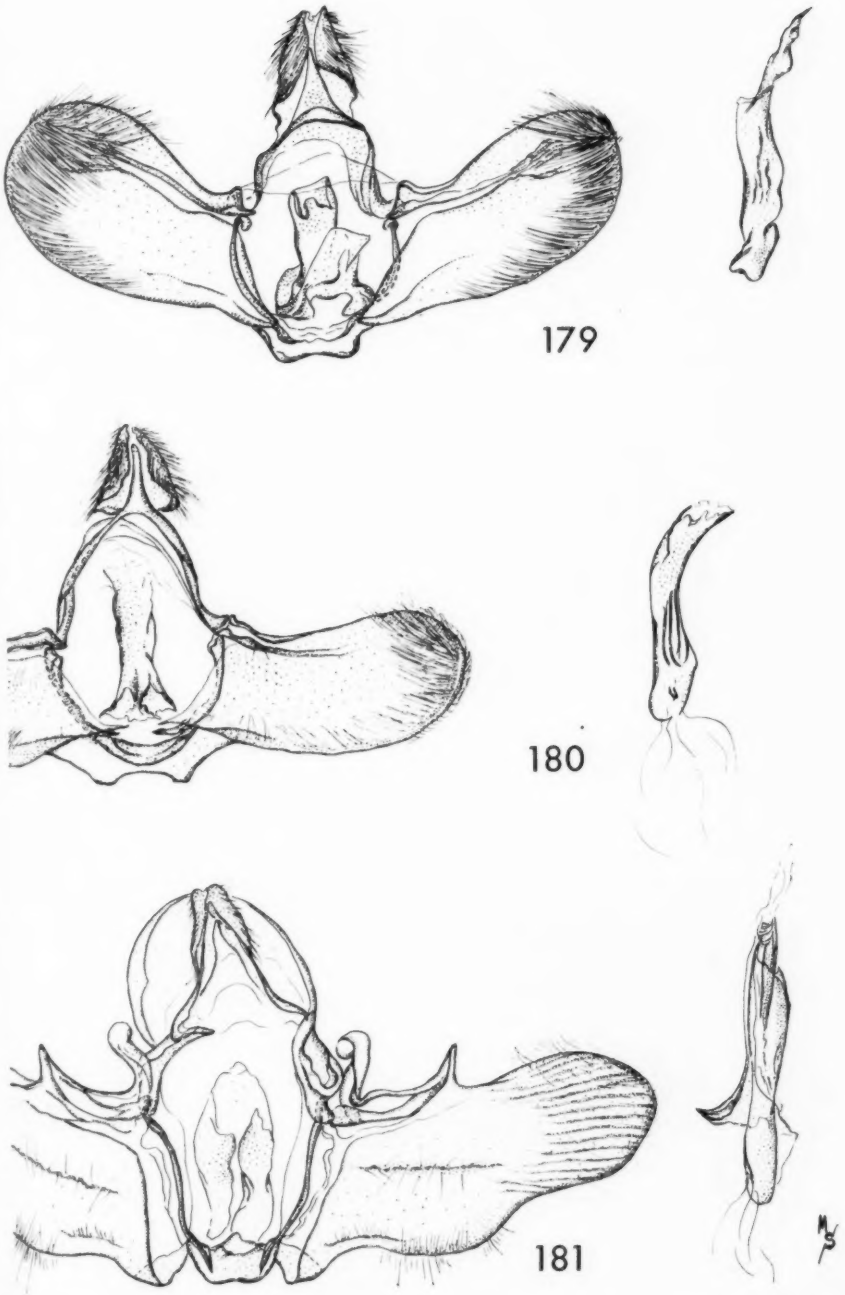
174

175

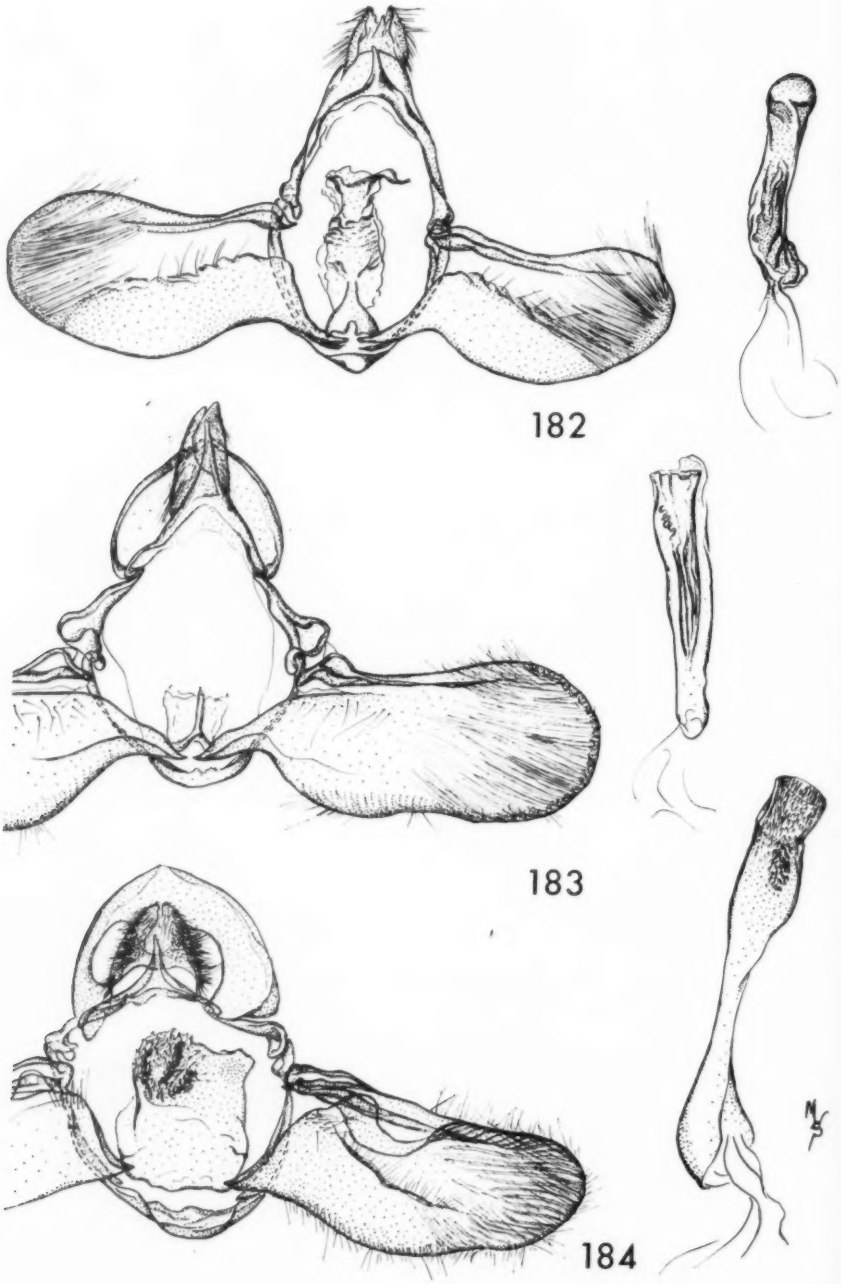
Figs. 173-175. Male genitalia: 173, *Alatuncusia bergii* (Möschler); 174, *Microtheoris vibicalis* (Zeller); 175, *M. ophionalis* (Walker).



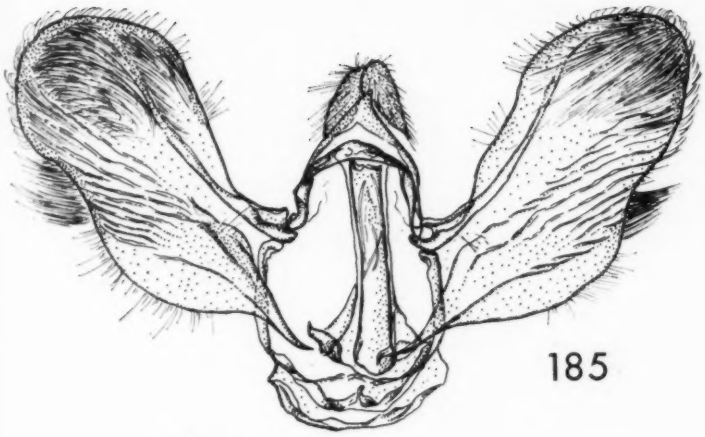
Figs. 176-178. Male genitalia: 176, *Rhodocantha diagonalis*, n. sp.; 177, *Frechinia helianthiales* (Murtfeldt); 178, *F. lutosalis* (Barnes and McDunnough).



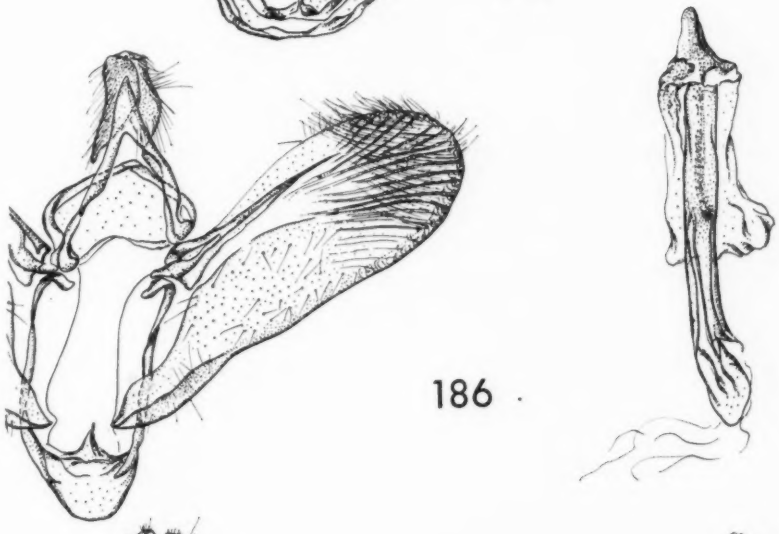
Figs. 179-181. Male genitalia: 179, *Frechinia laetalis* (Barnes and McDunnough); 180, *F. criddlealis* (Munroe); 181, *Procymbopteryx belialis* (Druce).



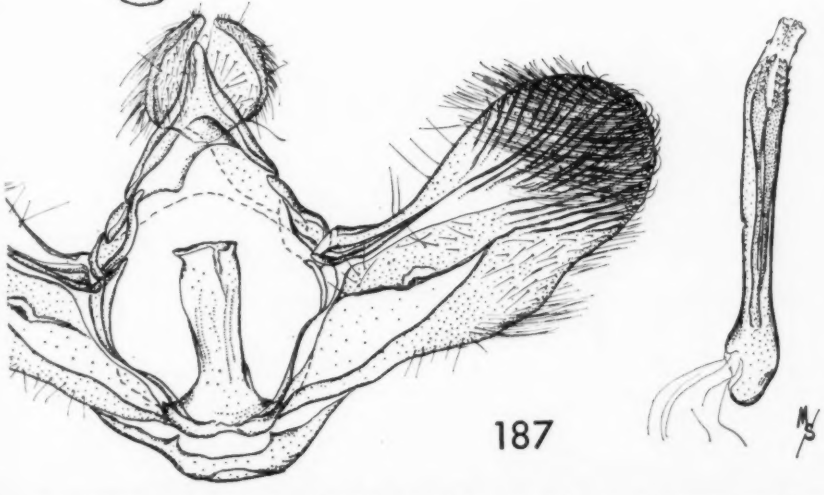
Figs. 182-184. Male genitalia: 182, *Cymbopteryx fuscimarginalis*, n. sp.; 183, *C. unilinealis* (Barnes and McDunnough); 184, *Edia semiluna* (Smith).



185

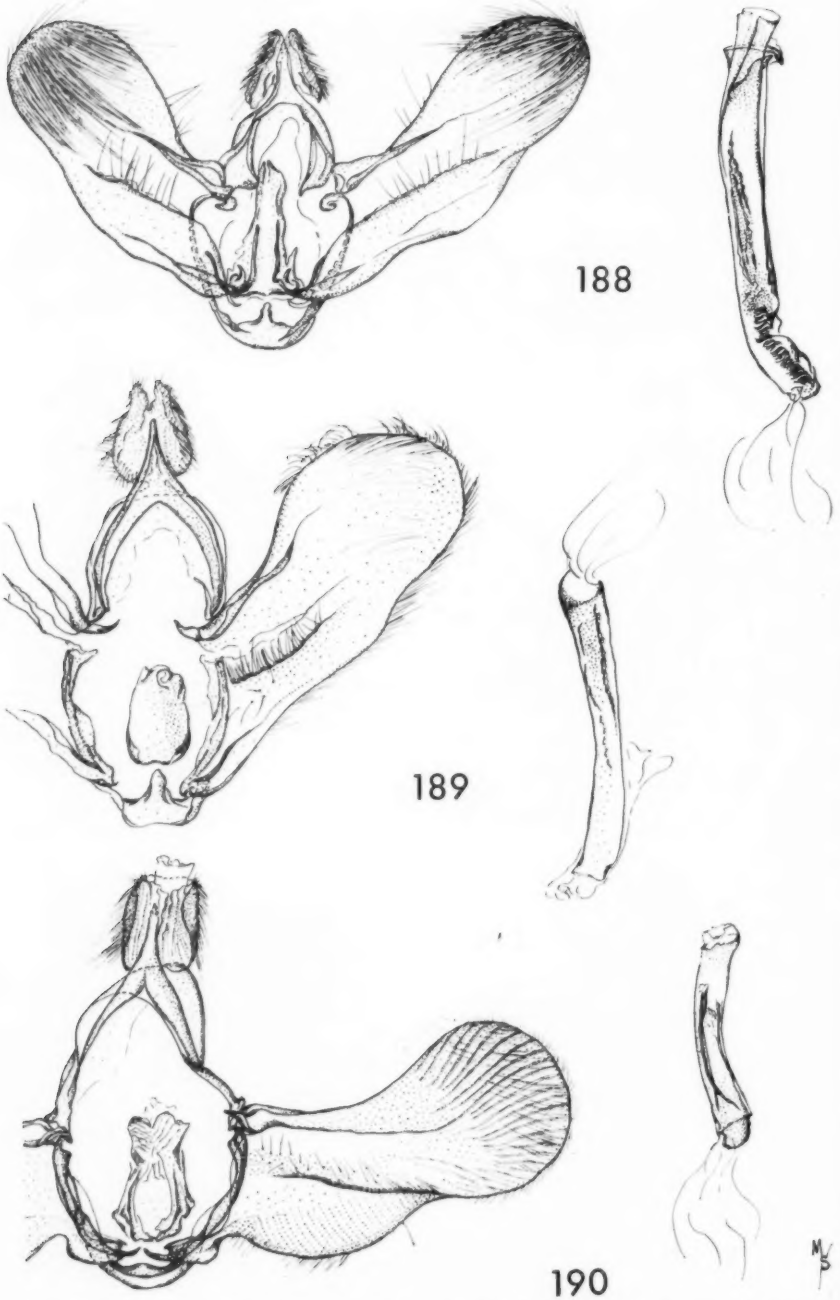


186

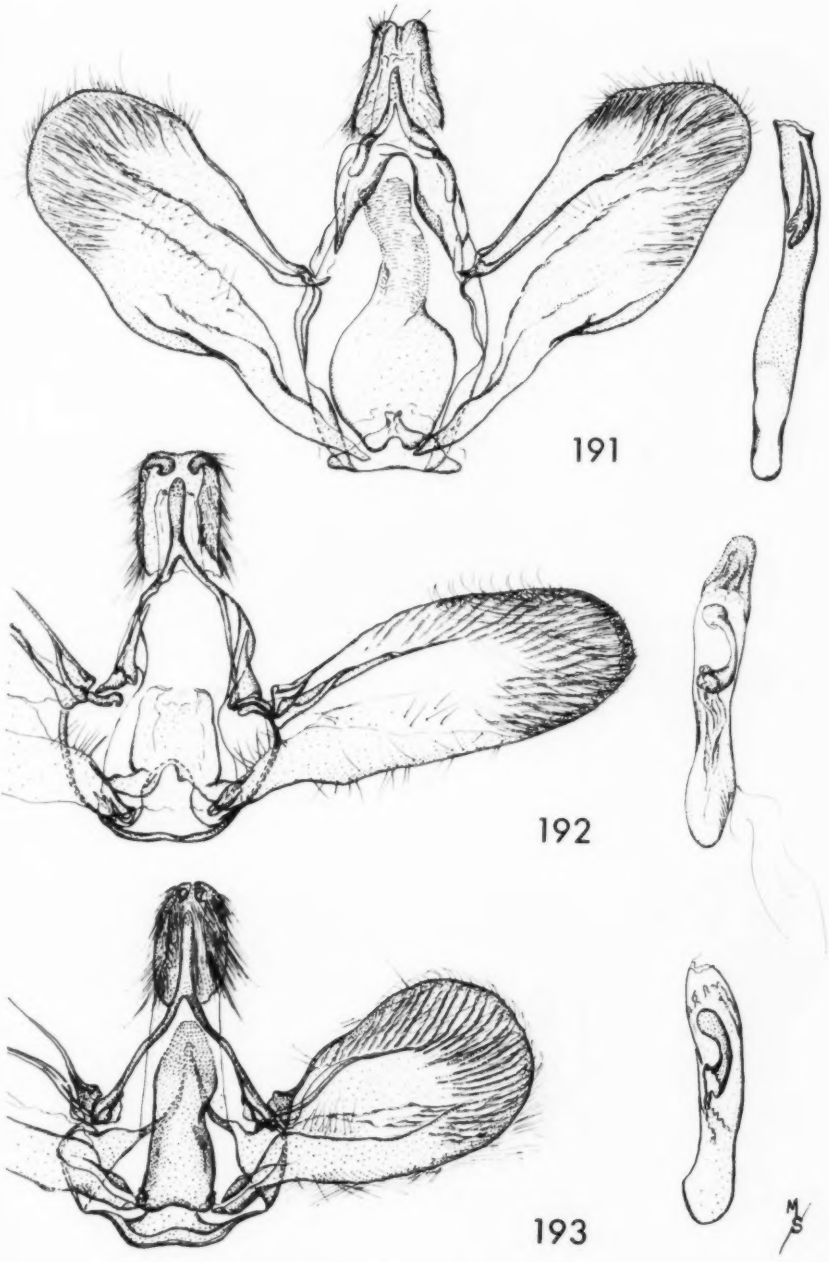


187

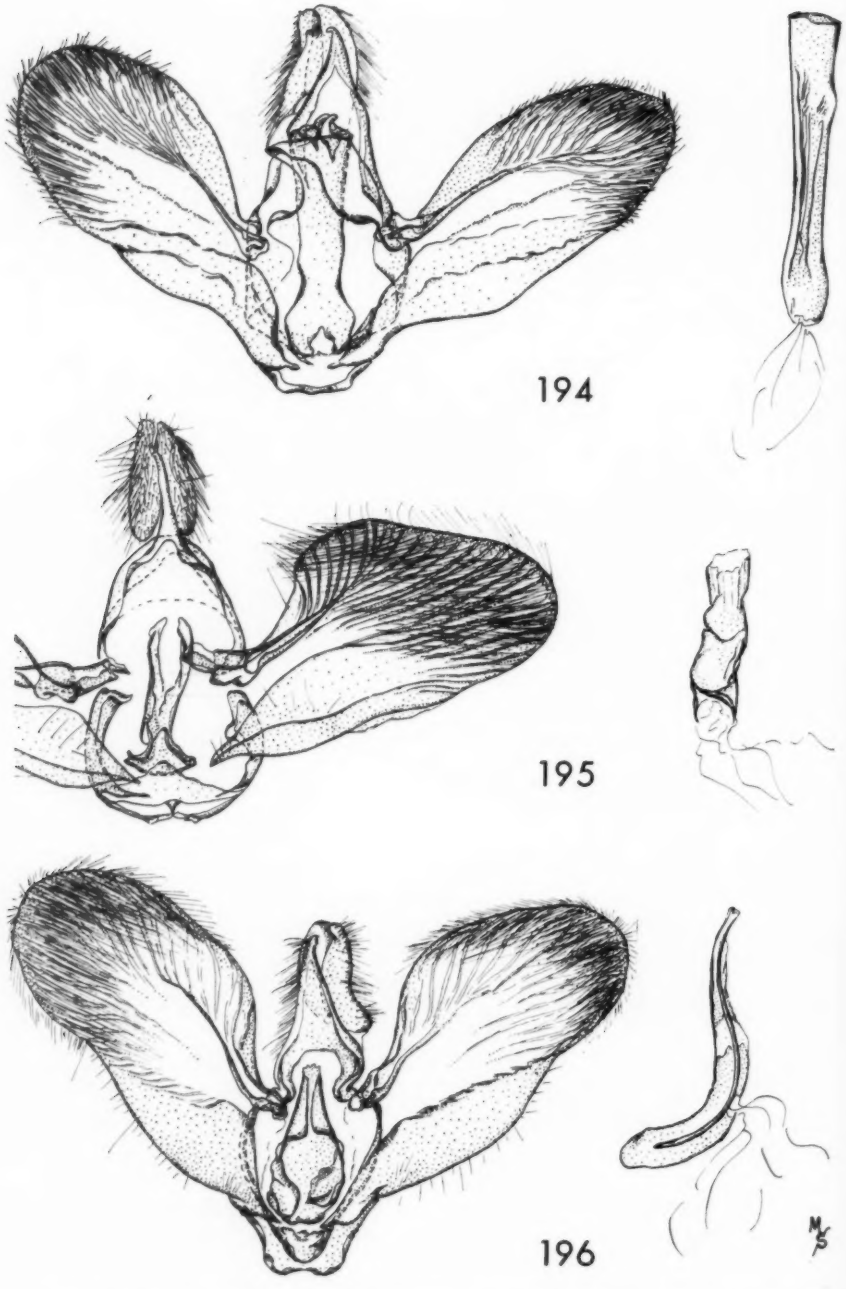
Figs. 185-187. Male genitalia: 185, *Edia minutissima* (Smith); 186, *Dichozoma parvipicta* (Barnes and McDunnough); 187, ***Cuneifrons coloradensis*, n. sp.**



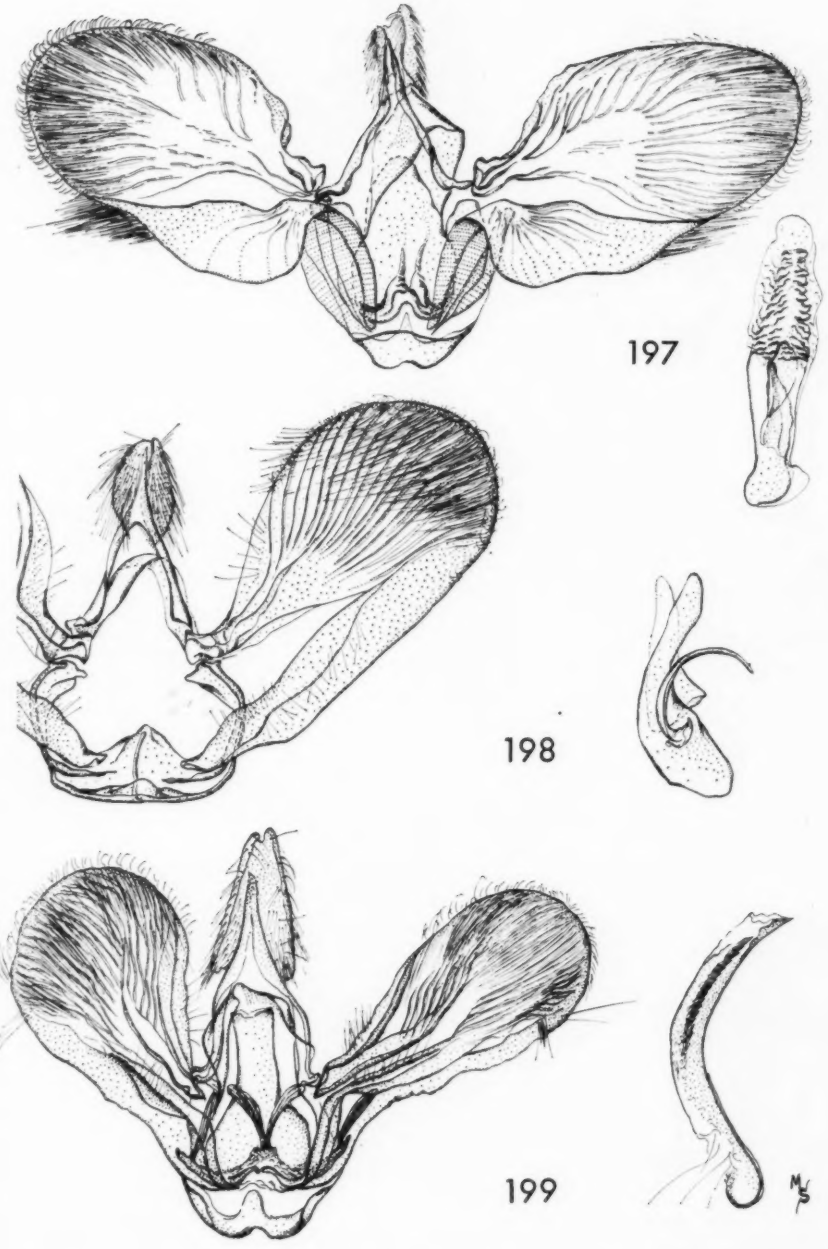
Figs. 188-190. Male genitalia: 188, *Gyros muirii* (Hy. Edwards); 189, *G. powelli* Munroe; 190, *Anatralata versicolor* (Warren).



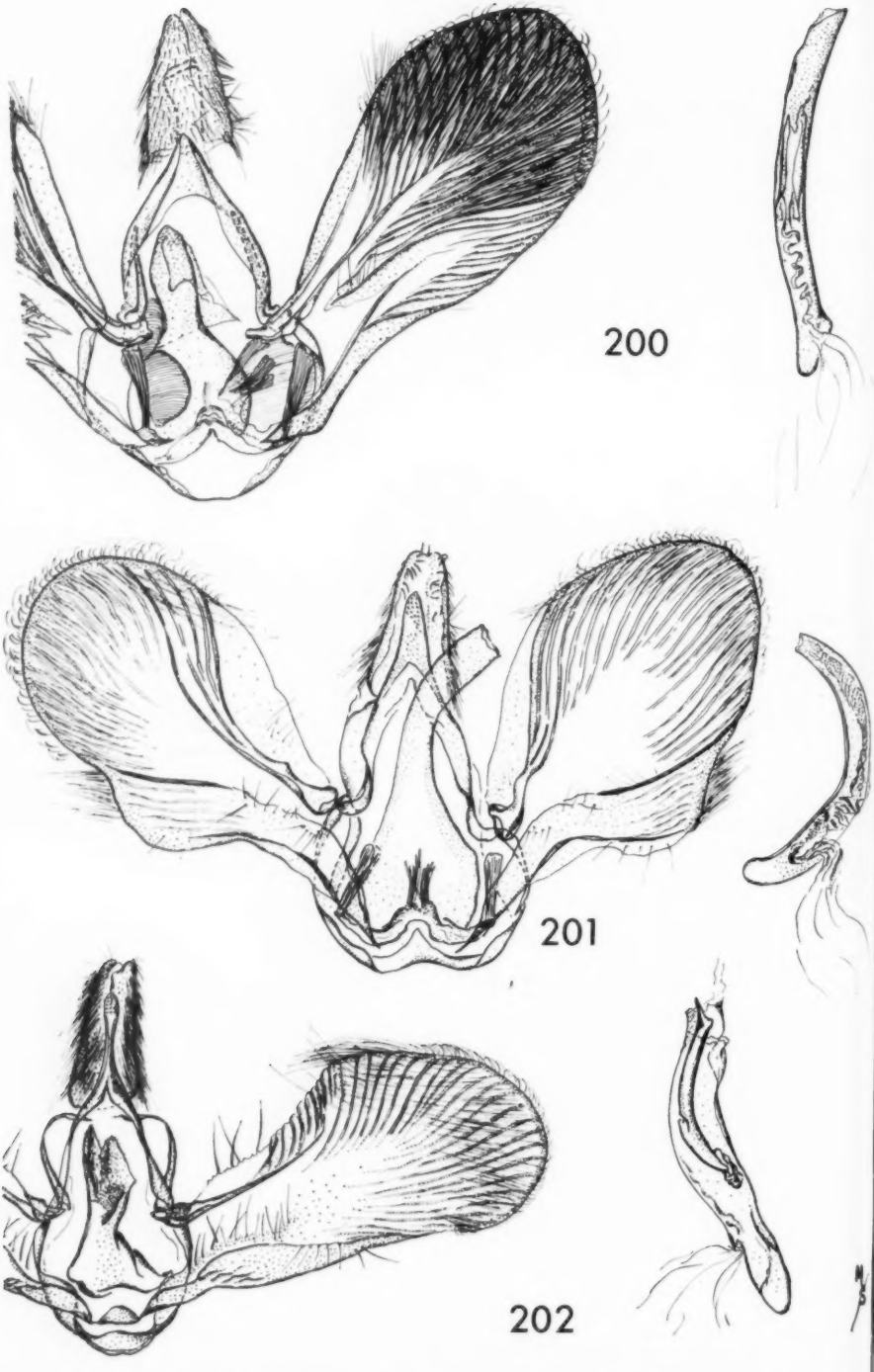
Figs. 191-193. Male genitalia: 191, *Metaxmeste nubicola* Munroe; 192, *Pogonogenys proximalis* (Fernald); 193, *P. frechini*, n. sp.



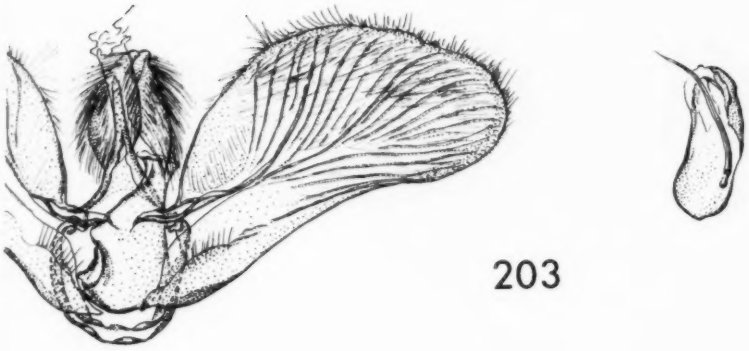
Figs. 194-196. Male genitalia: 194, *Chrismania pictipennalis* (Barnes and McDunnough); 195, *Plumipalpia martini*, n. sp.; 196, *Nannobotys commortalis* (Grote).

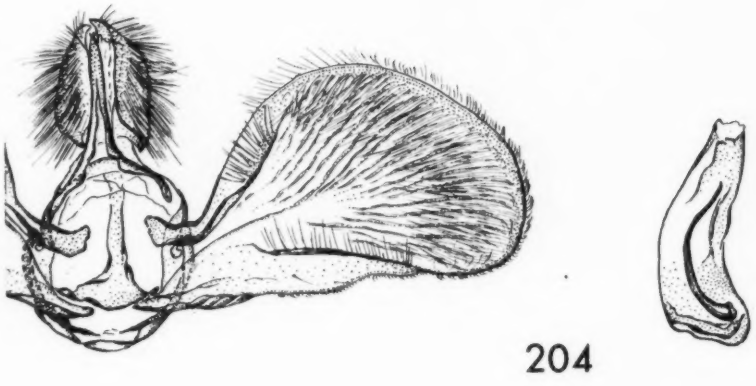


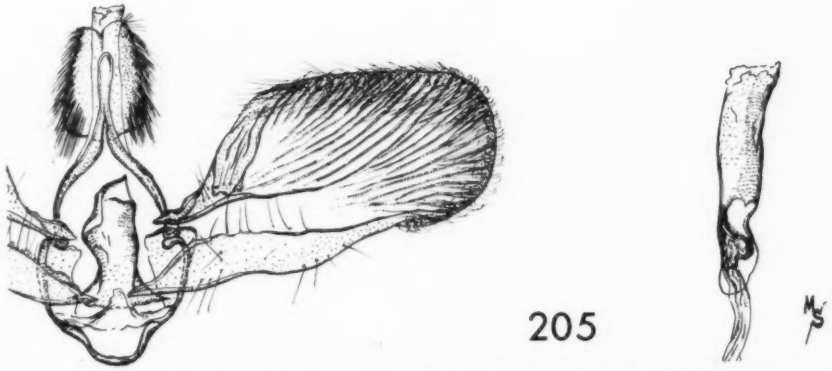
Figs. 197-199. Male genitalia: 197, *Porphyrorbegma fortunata* n. sp.; 198, *Psammobotys fordi*, n. sp.; 199, *Mimoschinia rufofascialis* (Stephens).



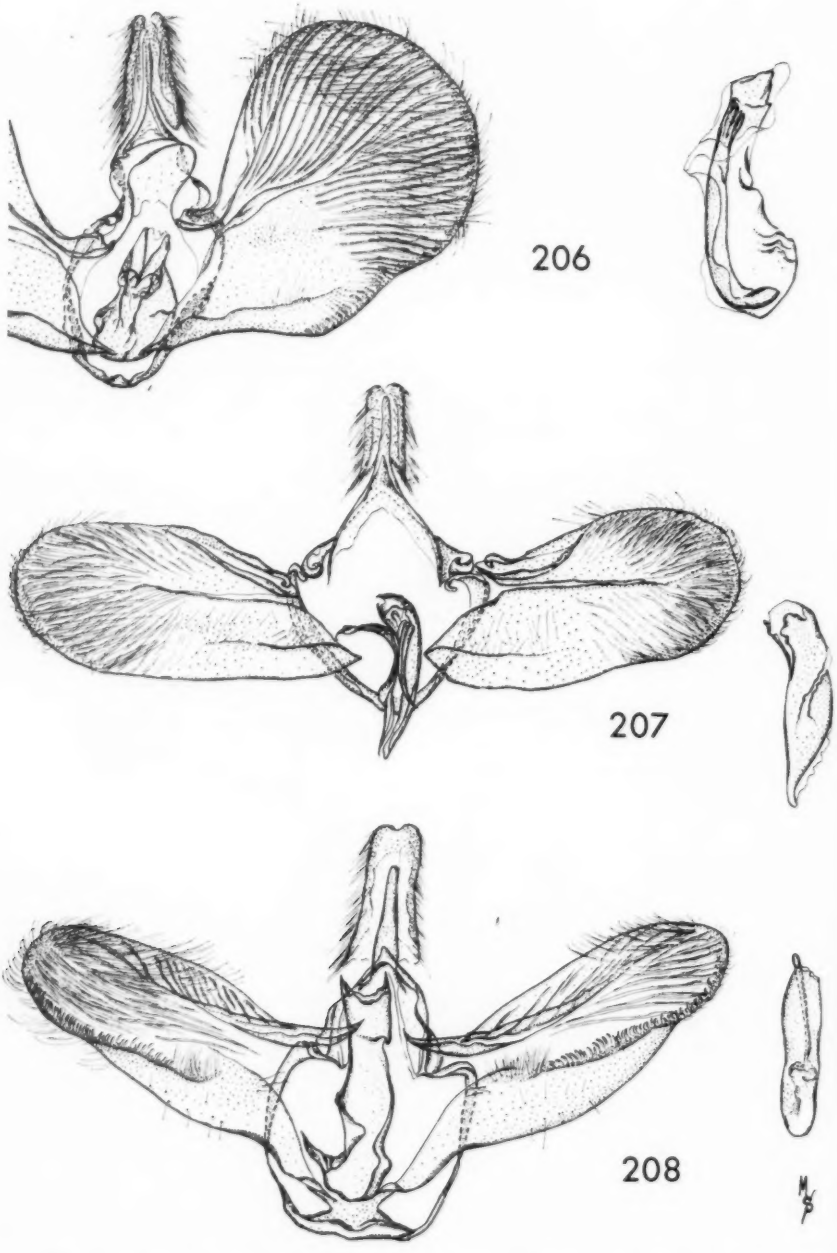
Figs. 200-202. Male genitalia: 200, *Jativa castanealis* (Hulst); 201, *Pseudoschinia elautalis* (Grote); 202, *Noctueliopsis puertalis* (Barnes and McDunnough).



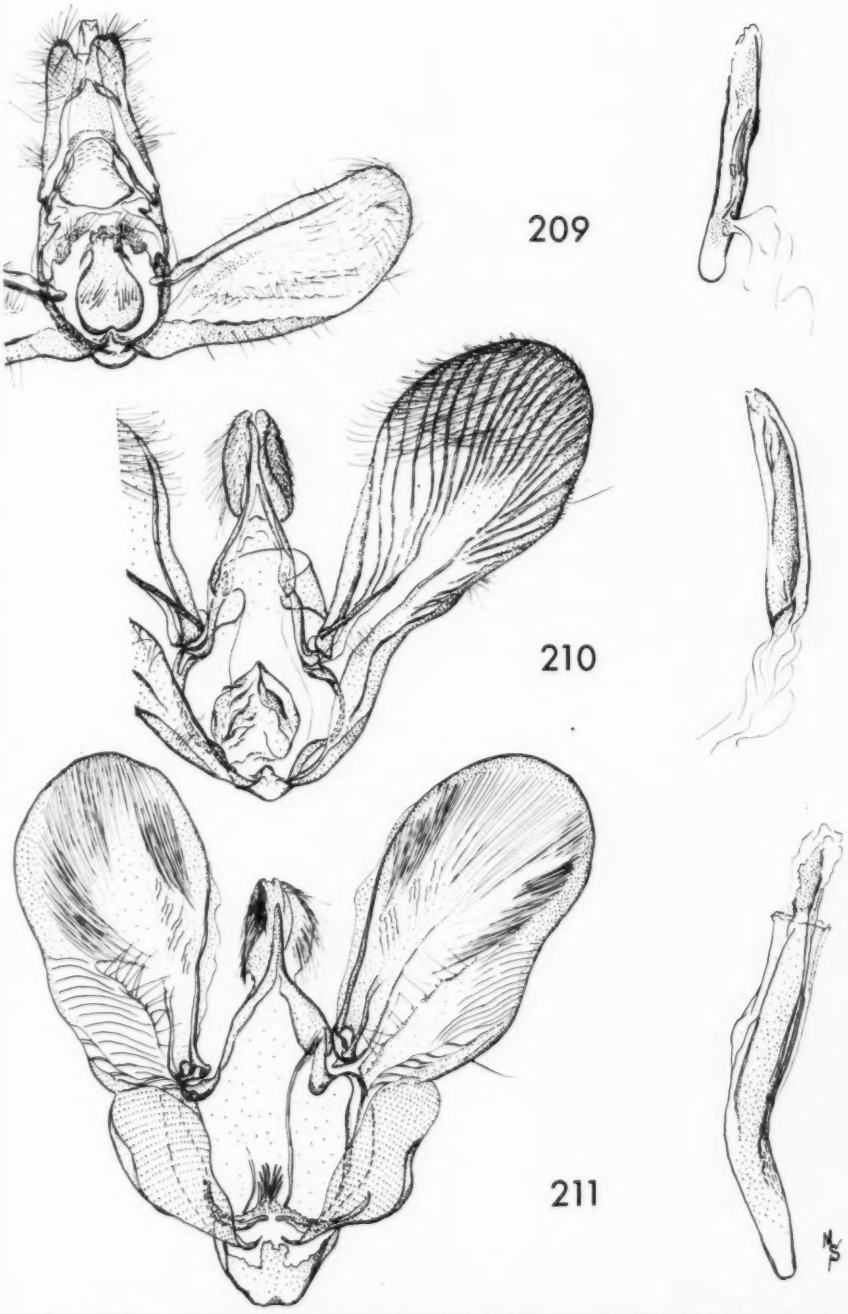




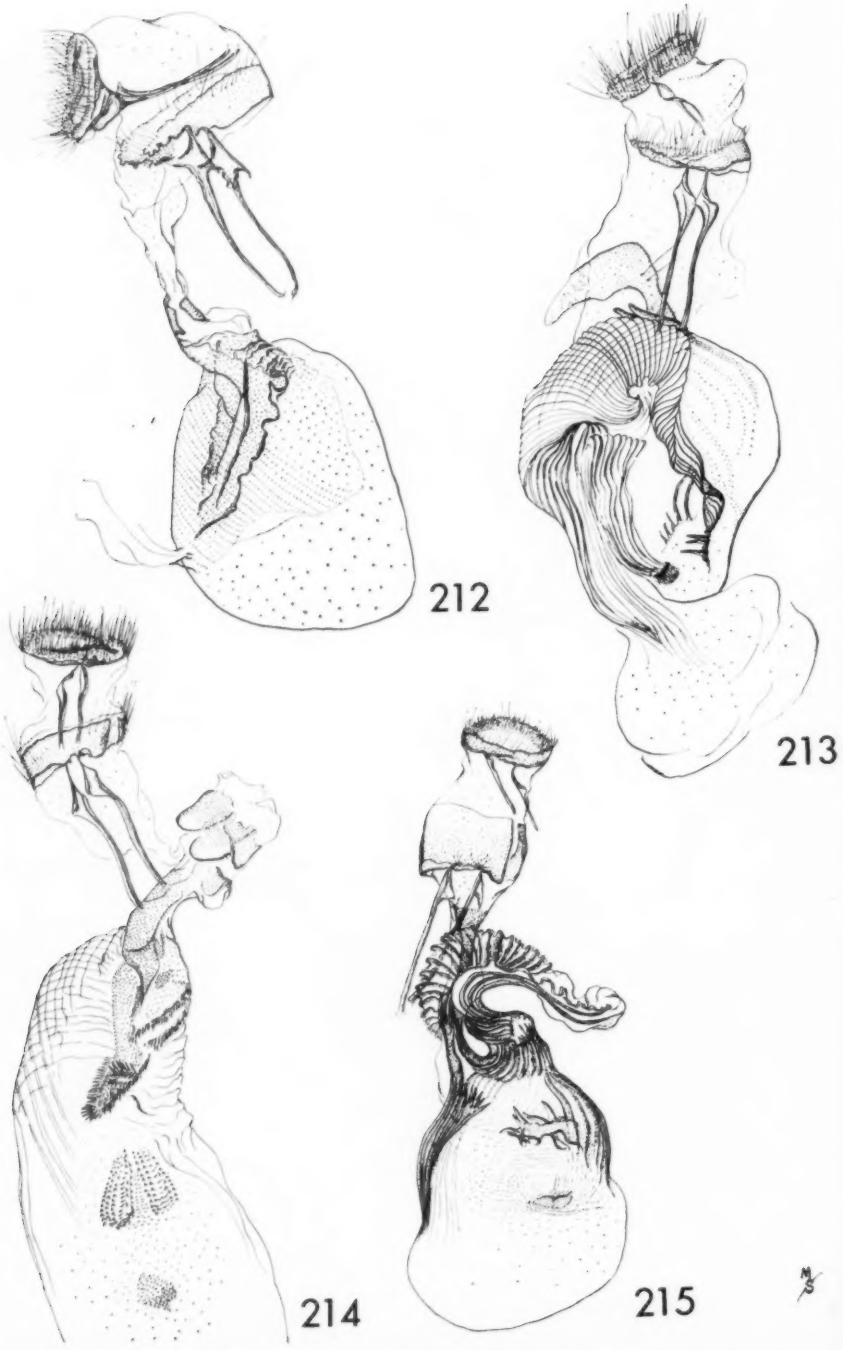
Figs. 203-205. Male genitalia: 203, *Noctueliopsis palmalis* (Barnes and McDunnough); 204, *N. atascaderalis* (Munroe); 205, *N. aridalis* (Barnes and McDunnough).



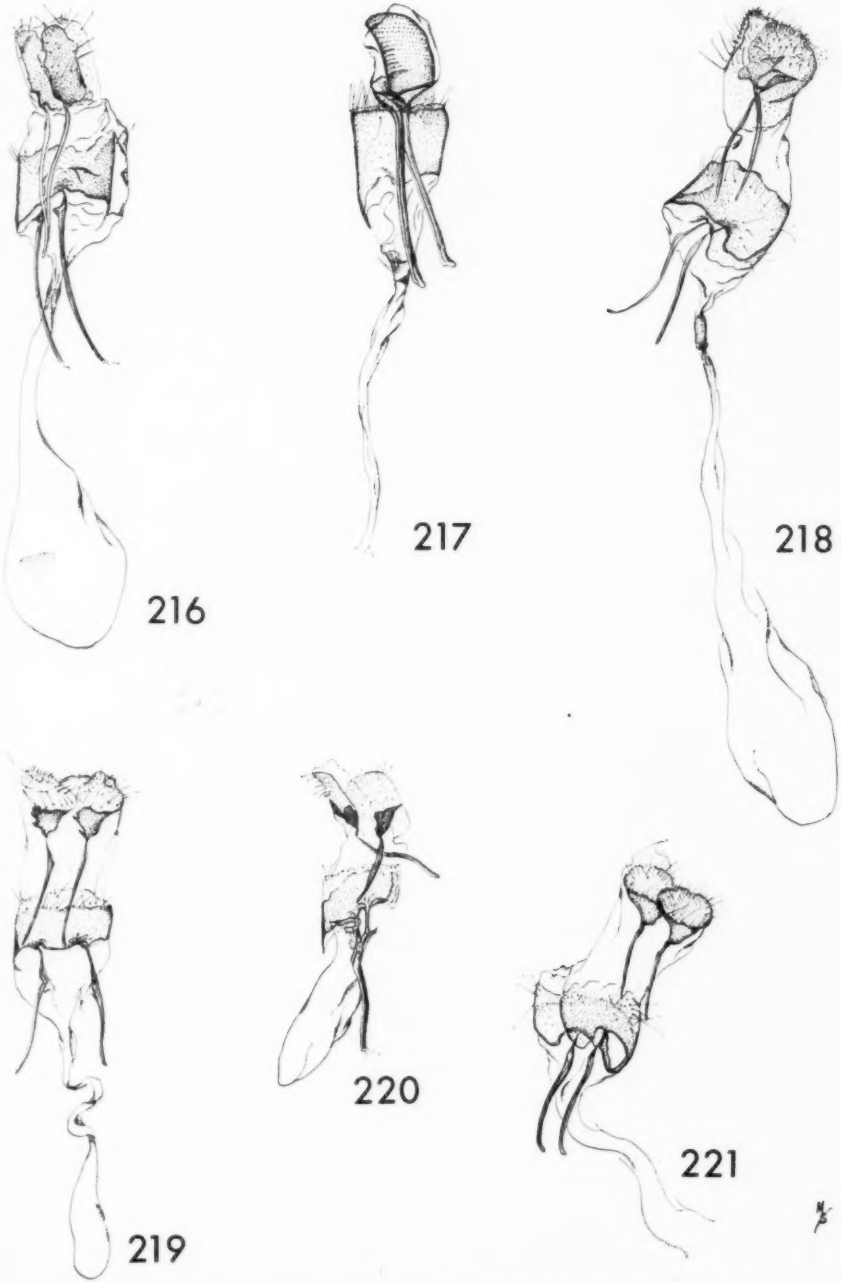
Figs. 206-208. Male genitalia: 206, *Noctueliopsis bububattalis* (Hulst); 207, *N. virula* (Barnes and McDunnough); 208, *Mojavia achemonalis* (Barnes and McDunnough).



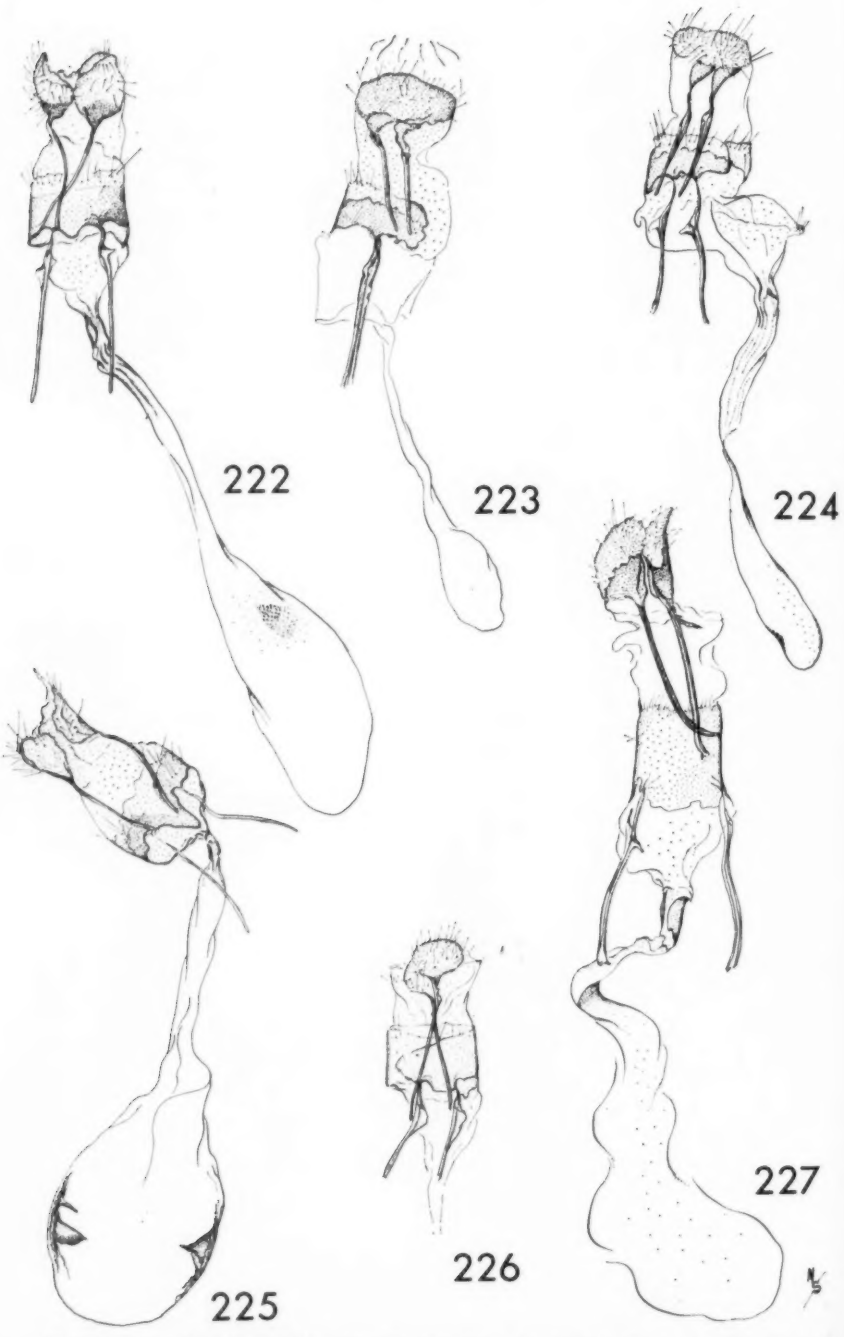
Figs. 209-211. Male genitalia. 209, *Eustixia pupula* Hübner; 210, *Heliothelopsis arbutalis* (Snellen); 211, *H. unicoloralis* (Barnes and McDunnough).



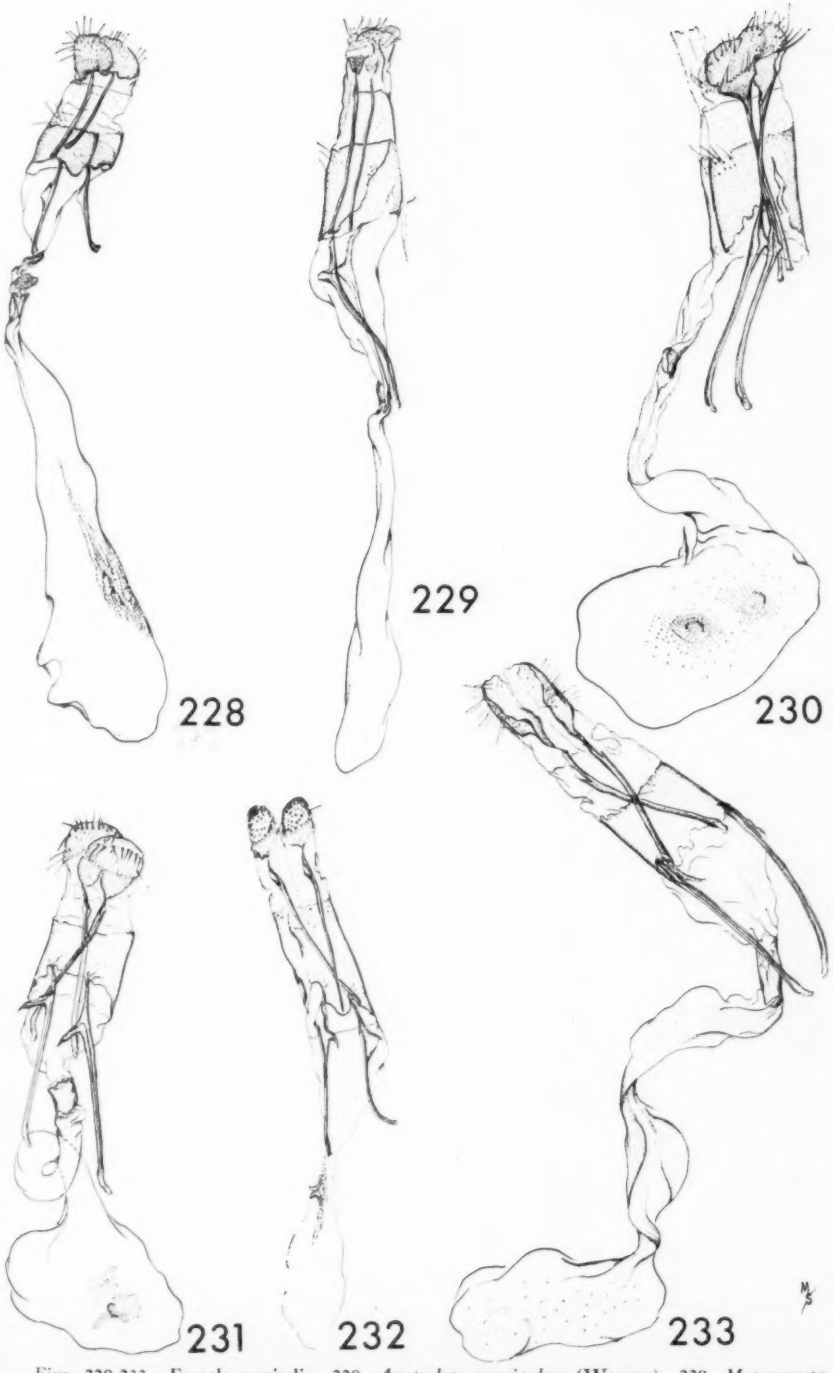
Figs. 212-215. Female genitalia. 212, *Metrea ostreonalis* Grote; 213, *Dichogama redtenbacheri* Lederer; 214, *D. amabilis* Möschler; 215, *Alatuncusia bergi* (Möschler).



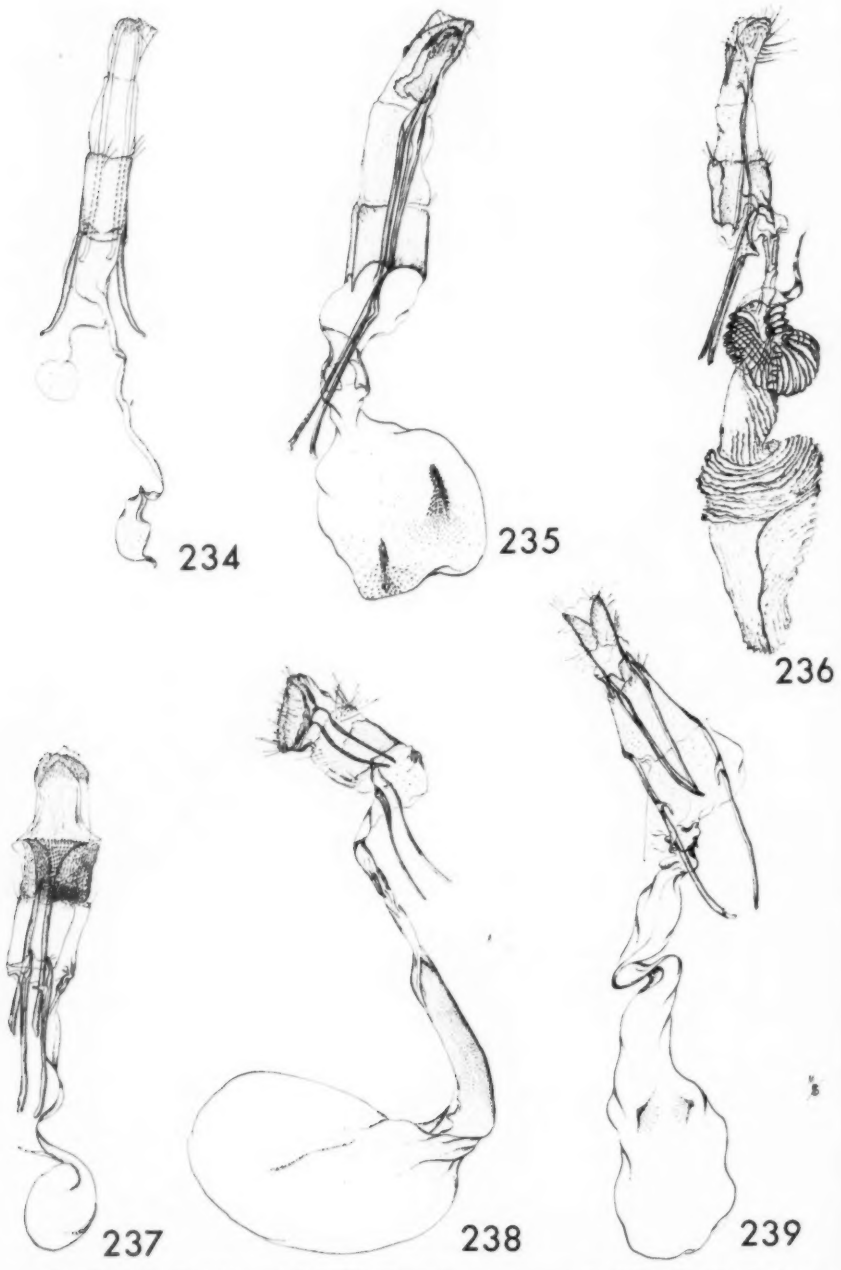
Figs. 216-221. Female genitalia. 216, *Microtheoris ophionalis* (Walker); 217, *Rhodocantha diagonalis*, n. sp.; 218, *Frechinia helianthiales* (Murtfeldt); 219, *F. laetalis* (Barnes and McDunnough); 220, *F. criddlealis* (Munroe); 221, *F. texanalis*, n. sp.



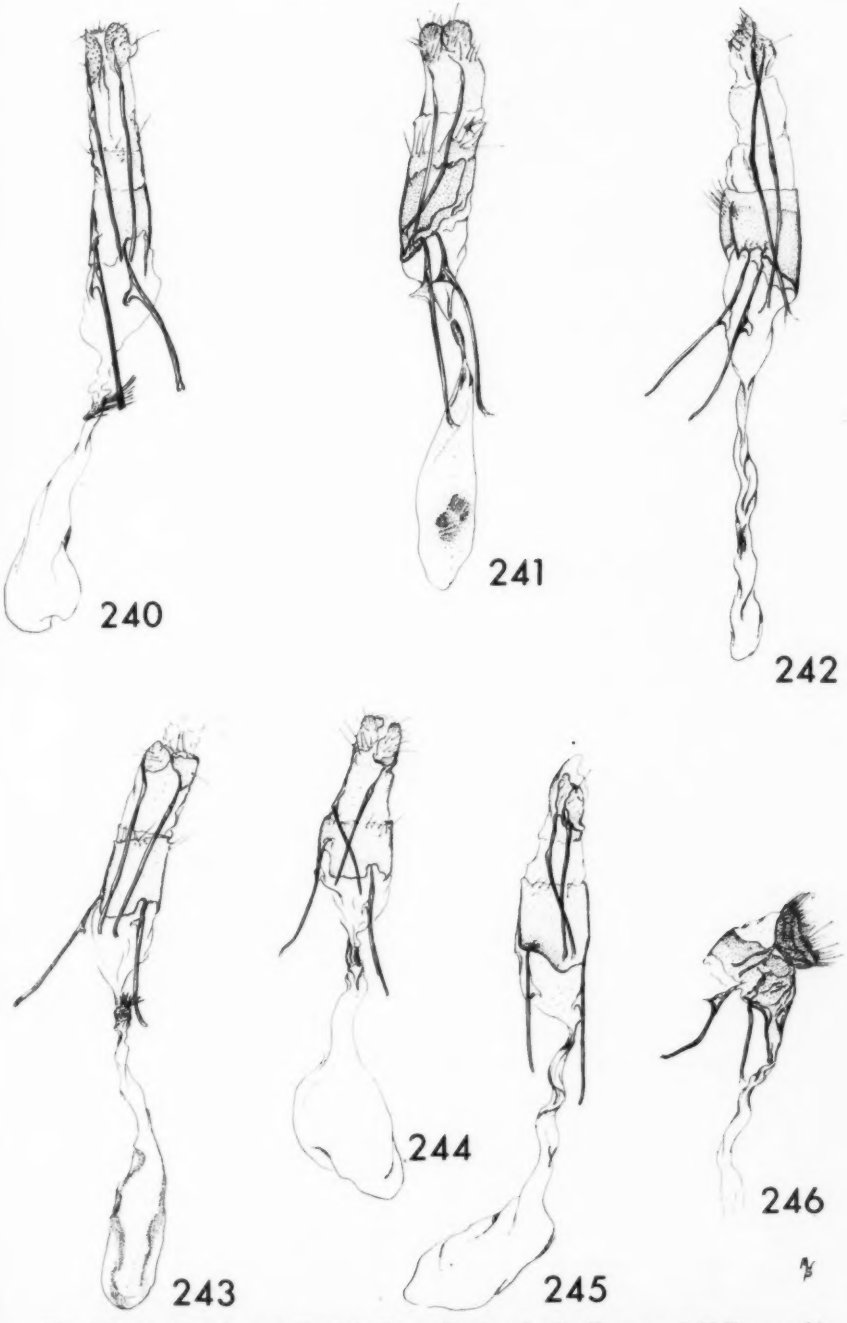
Figs. 222-227. Female genitalia: 222, *Cymbopteryx fuscimarginalis*, n. sp.; 223, *C. unilinealis* (Barnes and McDunnough); 224, *Edia semiluna* (Smith); 225, *E. minutissima* (Smith); 226, *Dichozoma parvipicta* (Barnes and McDunnough); 227, *Gyros muirii* (Hy. Edwards).



Figs. 228-233. Female genitalia: 228, *Anatralata versicolor* (Warren); 229, *Metaxmeste phrygialis* (Hübner); 230, *Pogonogenys proximalis* (Fernald); 231, *P. frechini*, n. sp.; 232, *P. masoni*, n. sp.; 233, *Chrismania pictipennalis* Barnes and McDunnough.



Figs. 234-239. Female genitalia: 234, *Nannobotys commortalis* (Grote); 235, *Porphyrorhegma fortunata*, n. sp.; 236, *Mimoschinia rufofascialis* (Stephens); 237, *Jativa castanealis* (Hulst); 238, *Pseudoschinia elautalis* (Grote); 239, *Noctueliopsis puertalis* (Barnes and McDunnough).



Figs. 240-246. Female genitalia: 240, *Noctueliopsis palmalis* (Barnes and McDunnough); 241, *N. atascaderalis* (Munroe); 242, *N. aridalis* (Barnes and Benjamin); 243, *N. bububattalis;* 244, *N. virula* (Barnes and McDunnough); 245, *Mojavia achemonalis* (Barnes and McDunnough); 246, *Eustixia pupula* Hübner.

INDEX

Abutilon ... 41
achemonalis (Barnes and McDunnough), *Mojavia* ... 50
Aegiotis Amsel ... 5
Aeschremon Lederer ... 5
Alatuncusia Amsel ... 6, 10
Alinea ... 41
amabilis Möschler, *Dichogama* ... 9
Anatralata, new genus ... 30
Anthophilodes Guenée ... 5
Anthophilopsis Ragonot ... 5
Aporodes Guenée ... 5
arbutalis (Snellen), *Heliothelopsis* ... 52
aridalis (Barnes and McDunnough), *Noctueliopsis* ... 45, 47
atascaderalis (Munroe), *Noctueliopsis* ... 45, 47
Atralata Sylvén ... 5
atripennalis Barnes and McDunnough, *Gyros* 27, 28
baboquivariensis, new subspecies, *Microtheoris ophionalis* ... 15
Basonga Möschler ... 5
belialis (Druce), *Procymbopteryx* ... 21
bergi (Moschler), *Alatuncusia* ... 11
bidentalis (Barnes and McDunnough), *Edia* ... 24
Blepharucha Warren ... 5
Boeotarcha Meyrick ... 5
bububattalis (Hulst), *Noctueliopsis* ... 45, 48
Canuza Walker ... 5
Capparis jamaicensis ... 10
Carbaea Walker ... 5
castanealis (Hulst), *Jativa* ... 43
Cataonia Ragonot ... 5
Catharia Lederer ... 5
Chlorobapta Barnes and McDunnough ... 54
Chrismania Barnes and McDunnough ... 35
Cliniodes Guenée ... 5
Clupeosoma Snellen ... 5
Coleosanthus grandiflorus ... 21
coloradensis, new species, *Cuneifrons* ... 26
commortalis (Grote), *Nannobotys* ... 37
coolidgei Dyar, *Edia* ... 24
costaemaculalis (Snellen), *Mimoschinia* ... 40
costipunctalis (Barnes and McDunnough), *Heliothelopsis* ... 52, 53
criddlealis (Munroe), *Frechinia* ... 17, 19
Cuneifrons, new genus ... 26
Cymbopteryx, new genus ... 22
Cynaeda Hübner ... 5
Dausara Walker ... 5
Deanolis Snellen ... 5
decorata (Druce), *Mimoschinia rufofascialis* ... 41
diagonalis, new species, *Rhodocantha* ... 16
Dichogama Lederer ... 6, 8
Dichogamini ... 7
Dichozoma, new genus ... 25
Dirca palustris ... 8
Edia Dyar ... 23
elautalis Grote, *Pseudoschinia* ... 44
Emprepes Lederer ... 5
Endolophia Hampson ... 5
Endotrichinae ... 5
Epacestria Hübner ... 5
Ephelis Lederer ... 5
Epinoorda Rebel ... 5
eremica, new subspecies, *Microtheoris ophionalis* ... 15
Ertrica Walker ... 5
Eteta Walker ... 5
Eucoronimyia hastata (Coquillet) ... 22
Euctenospila Warren ... 5
Eurrhypis Hübner ... 5
Eustixia Hübner ... 50
Evergestini ... 5
Exarcha Lederer ... 5
fascialis (Haworth), *Mimoschinia* ... 40
fordi, new species, *Psammobotys* ... 34, 39
fortunata, new species, *Porphyrorhegma* ... 38
frechini, new species, *Pogonogenys* ... 32, 33
Frechinia, new genus ... 16
fuscimarginalis, new species, *Cymbopteryx* ... 22
Galleriinae ... 5
gelidalis (Walker), *Mimoschinia* ... 40
gilvicostalis (Hampson), *Alatuncusia* ... 10, 12
Gyros Henry Edwards ... 27
Hammocallos Chrétien ... 5
helianthiales (Murtfeldt), *Frechinia* ... 17
Helianthus ... 18
Heliothelopsis, new genus ... 52
Hemiscopis Warren ... 5
Heortia Lederer ... 5
Hercyna Treitschke ... 5
Hercynella Bethune-Baker ... 5
Hydrorybina Hampson ... 5
Idessa Walker ... 5
jativa (Barnes), *Jativa* ... 43
Jativa, new genus ... 42
Kerbela Amsel ... 5
lacustris, new subspecies, *Microtheoris ophionalis* ... 14
laetalis (Barnes and McDunnough), *Frechinia* ... 17, 19
limbatus Henry Edwards, *Oribates* ... 27
lutosalis (Barnes and McDunnough), *Frechinia* ... 17, 18
Mabilleodes Marion and Viette ... 5
magnalis (Hulst), *Pseudoschinia* ... 44
Malvastrum ... 41
martini, new species, *Plumipalpia* ... 36
masoni, new species, *Pogonogenys* ... 32, 34
Metaxmeste Hübner ... 31
Metrea Grote ... 6, 7
microstagma Dyar, *Edia* ... 24
Microtheoris Meyrick ... 6, 12
Mimoschinia Warren ... 40
minima (Dyar), *Nannobotys* ... 37
minutissima (Smith), *Edia* ... 24
Mojavia, new genus ... 50
Monocona Warren ... 27
muirii (Henry Edwards), *Gyros* ... 27, 28
murmuralis (Dyar), *Frechinia* ... 17
Nannobotys, new genus ... 36
nasonialis (Zeller), *Microtheoris* ... 14
Neogenesis Hampson ... 5
Noctuelia Guenée ... 5
Noctueliopsis, new genus ... 44
Noctuelita Strand ... 5
Noctuomorpha Guenée ... 5
Noorda Walker ... 5
Noordodes Hampson ... 5
novalis (Grote), *Mimoschinia rufofascialis* ... 40
nubicola Munroe, *Metaxmeste* ... 31
nuchalis (Grote), *Mimoschinia rufofascalis* ... 42
Nymphulinae ... 5
occidentalis, new subspecies, *Microtheoris ophionalis* ... 15
Odontia Duponchel ... 5
Odontidae ... 5
Odontiinae ... 5
Odontiini ... 12
ophionalis (Walker), *Microtheoris* ... 13
Oribates Henry Edwards ... 27
ostreonalis Grote, *Metrea* ... 7
palmalis (Barnes and McDunnough), *Noctueliopsis* ... 45, 46
pandoralis (Barnes and McDunnough), *Noctueliopsis* ... 45, 48
parvipicta (Barnes and McDunnough), *Dichozoma* ... 26
Pelaea Lederer ... 5
perviana (Walker), *Mimoschinia* ... 40
phaeopasta (Hampson), *Cymbopteryx* ... 23
phrygialis (Hübner), *Metaxmeste* ... 31
pictipennalis Barnes and McDunnough, *Chrismania* ... 35
Pitama Moore ... 5
Plumipalpia, new genus ... 36
Pogonogenys, new genus ... 32
Porphyrorhegma, new genus ... 37
powelli Munroe, Gyros ... 29
Procymbopteryx, new genus ... 20
Protrigonia Hampson ... 5
proximalis (Fernald), *Pogonogenys* ... 32
Psammobotys, new genus ... 39
Pseudoschinia, new genus ... 43
puertalis (Barnes and McDunnough), *Noctueliopsis* ... 45
pulcharalis (Barnes and McDunnough), *Mojavia* 50
pupula Hübner, *Eustixia* ... 51
Pyralinae ... 5
Pyraustinae ... 5
redtenbacheri Lederer, *Dichogama* ... 9
Rhamnus frangula ... 8
rhea (Druce), *Heliothelopsis* ... 52
Rhodocantha, new genus ... 14
rubralis (Warren), *Gyros* ... 27, 28
rufistrigalis Barnes and McDunnough, *Chlorobapta* ... 54
rufofascialis (Stephens), *Mimoschinia* ... 40
Schoenobiinae ... 5
semiluna (Smith), *Edia* ... 24

sesquialteralis (Zeller), *Microtheoris* 14
Sida 41
Syntonarcha Meyrick 5
Taurometopa Meyrick 5
tectalis (Barnes and McDunnough), *Noctueliopsis* 48
Tegostoma Zeller 5
texanalis, new species, *Frechinia* 17, 20
thalialis (Walker), *Mimoschinia* 40
Thelcteria Lederer 50
Thesaurica Turner 5
Threnodes Duponchel 5
thyanalis (Druce), *Frechinia* 17
Titanii 5
Titanio Hübner 5
Tripudia Grote 27
Turania Ragonot 5
Tyspana Moore 5
unicoloralis (Barnes and McDunnough), *Heliothelopsis* 52, 53
unilinealis (Barnes and McDunnough), *Cymbopteryx* 22, 23
urticaloides (Fyles), *Metrea* 7
Usgentia Amsel 5
versicolor Warren, *Anatralata* 30
vibicalis (Zeller), *Microtheoris* 12, 13
virula (Barnes and McDunnough), *Noctueliopsis* 45, 49
Wissadula 41